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Victor Horsley Memorial Lecture

ON THE

INSULATION OF THE NERVOUS SYSTEM.

Delivered at the House of the British Medical Association on July 9th, 1926.

BY WILFRED TROTTER, M.S. LOND., F.R.C.S. ENG.,
SURGEON, UNIVERSITY COLLEGE HOSPITAL.

WITHIN a few days it will be exactly ten years since Victor Horsley died. The circumstances of his death, however lamentable they may seem to us who lost him, were not, perhaps, very different from what he himself might have wished. He was at work in the direct service of his country; he was using his whole strength in the relief of suffering, while his mind and body kept unabated their astonishing and characteristic vigour. In commemorating this great man our attention is attracted to three separate aspects of his life. We think of him as a physiologist and as a surgical pioneer, and we think of the personality which lay behind and informed these and all the activities of his crowded years.

His work for science and for surgery has long been incorporated with the general body of knowledge and has its lasting place. For his personality there is no such lodgment and those in whose memory it lives so vividly are already, after the passage of even ten years, a heavily reduced company. I therefore gratefully accept this chance to make my small record of a man who, in my knowledge of men, was unique in this, that he combined an inflexible belief in his own standards and a truly apostolic zeal in all public affairs, with a disposition that was in its essence boyish and simple and in every private relation easy and mild and kind.

METHODS OF INVESTIGATION IN NEUROLOGY.

The pioneer work of Horsley in the surgery of the central nervous system has had, and must continue to have, remote and secondary effects upon the development of neurology. Whenever a region of the body has been made accessible to surgery, a new insight into its pathology has resulted from the fresh experience that has been acquired of morbid processes in the living and especially of the earlier stages of disease. This has been abundantly shown in the case of the abdomen and in the case of the thorax. In that of the central nervous system it is, perhaps, as yet less obvious, but it is already unmistakable and will become increasingly so as experience accumulates.

While most of us would no doubt agree that important practical knowledge is to be acquired in this way, there are probably few who look to it with much hope for the discovery of principles of general scope and fundamental significance. As a possible source of any wide expansion of neurological theory it is just and natural to look to laboratory methods and the study of animals, rather than to methods of the bedside and to the study of man himself in his reactions to injury and disease. In the familiar and not always philosophically made comparison between the experimental and clinical methods, it is usually, however, overlooked that the latter has of necessity a virtue which is in some degree its special possession. The student whose material is man is drastically handicapped by the limited extent to which experiment is open to him. He must take his problems as he finds them and deny himself the help of almost all the preliminary simplifications which are the essence of the laboratory worker's advantage. At the same time, however, the conditions of his work impose upon him a knowledge of his material at once so intimate and so wide as to constitute a situation probably unique in the whole field of science. When we consider the intensity of watchfulness which the quite ordinary practice of neural surgery calls for and obtains it must be obvious that the behaviour of the human brain in the various circumstances of injury and disease is far better known than that of any other animal. Indeed, one of the characteristic difficulties of the clinician comes from this very abundance of the stuff of observation, and he is likely to be overwhelmed by its bulk and rendered inattentive by its familiarity, losing amongst details his sense for larger groupings, and amidst the everyday his eye for the significant. Nevertheless, the history of science shows that one important source of general ideas has been just this very circumstance of a close intimacy with a large range of observed facts.

The familiarity with the behaviour of the central nervous system that has been possible since it has been accessible to surgical exploration and treatment, is capable of reacting in an important way on our attitud to neurological theory.

THE ABSTRACT METHOD IN NEUROLOGY.

There are few departments in biological science in which what we may call abstract methods of thought are more naturally and inevitably used than they are in neurology. By abstract methods I mean methods in which the single or grouped items of experience are for convenience of thought represented by abstracted summaries of themselves or symbols, which have a handiness for working on in the mind that the raw undigested facts cannot possess. The discovery of the uses of abstraction was an event of fundamental importance in the evolution of science, and in the early Greek natural philosophers we can see with what exultation was welcomed the extension it gave to the powers of the mind. Perfectly legitimate and indeed indispensable as the method is, it is obviously not applicable to all material of inquiry with equal ease and safety. With what certainty and precision the qualities of number, space, and motion allow of abstraction is seen in the noble achievements of mathematics, physics, and astronomy, achievements which through their most recent extensions in atomic and in stellar physics have finally established the overwhelming prestige of the method and its effective leadership in science.

When, however, we make living matter and living organisms the subject of study, we find, though we can by no means dispense with the use of abstraction, it is far less effective in application and has disadvantages which it does not seem to possess in the inorganic world. In biological inquiry an abstract conception, though professedly no more than a convenient summary of experience and constantly subject to the censorship of facts, is apt to acquire a quasi-vitality of its own through which it loses its immediate dependence on experience and comes to dominate instead of serving. The danger arises not so much from the extreme cases of conceptions which easily show as flagrantly inconsistent with facts, but from ideas primarily good and sound which have been endowed with a prestige that in their very nature they could not deserve. That an over-valuation of the abstract conception as an implement of research can deceive even the very elect could be shown by many eminent examples. The biological writings of Herbert Spencer are, perhaps, as good an instance as comes readily to mind, and it is easy to trace in them how this very weakness has led within a few years to their greatly diminished influence. To find so distinguished a man in a state of reprobation may well make humble people look anxiously to their own doctrines, and indeed which of us, for example, can ask himself without a qualm what is the *exact* meaning he attaches to the abstract conception of evolution which has dominated the biological world for half a century.

When we turn to neurology, we find the currency and influence of abstract conceptions very great, as, for example, in the theory of aphasia, in Hughlings Jackson's interpretation of cerebral functions, in Monakow's doctrine of diaschisis and so forth. All these are doubtless, in their essence and

originally, good and valuable conceptions. It is another matter, however, how far their function as professed summaries of experience is kept distinct from their charm as mere intellectual patterns. It is thus peculiarly necessary for neurology to submit itself to the discipline of frequent returns to the comparatively primitive and clumsy method of direct and concrete thinking. Such efforts should, I think, be guided by two principles. The first is the obvious one that a constant and docile reference to experience is indispensable. The second is, perhaps, less obvious and is less simple to state; it accepts the free use of hypothesis as essential to neurological progress, but it enjoins, that in drawing up our necessarily more or less abstract conceptions of the nature and working of the nervous system, we should incline to the use of ideas of a definitely biological type and should, as far as possible, avoid concepts that in their very nature can have no direct resemblance to what actually happens in the body. In giving to our neurological ideas this concrete and realistic tone we shall always depend to a great extent on an intimate familiarity with the appearances and behaviour of the actual nervous tissues. The knowledge of this kind we possess to-day may well be regarded as having in great part grown out of Horsley's work.

The surgical neurologist is perhaps fortunately placed for considering the nervous system in an attitude of mind at once general and concrete; while he lacks the special knowledge of the anatomist, the physiologist, and the pathologist, he is also free from their special preoccupations; while the behaviour of the nervous tissues in injury and disease is a matter of familiar knowledge it is prevented from becoming commonplace by the narrow margin of safety within which he works and the serious consequences that follow when it is exceeded. Thus is almost forced on him the development of views which, whatever they may lack in the way of abstruse detail will, at any rate, always tend to be strictly realistic.

INJURIES TO THE LIMITING STRUCTURES OF THE NERVOUS SYSTEM.

In illustration of this general point of view I propose to call attention to a small group of facts which, while they are of more or less common knowledge, are perhaps more especially within the observation of the surgeon. They are concerned with the responses of the nervous system to certain injuries.

Division of a Nerve.—It is a very old observation that when a mixed peripheral nerve is cut its central end becomes swollen into a bulbous mass of dense fibrous tissue. It seems sometimes to be thought that this is only an occasional result of a nerve section, and is especially to be looked for when persistent pain has followed the injury. This is, of course, not the fact. The bulbous end is the invariable and inevitable result of a nerve section to which it is the necessary and, so to say, physiological response. When we inquire into the exact nature of this so-called amputation neuroma we find that in immediate consequence of the section the nerve-fibres ramify and grow out from the cut end so that there issues from this a veritable spray of fine naked axis cylinders. The result of this invasion is to call forth an energetic response from the adjacent non-neural tissue leading to the formation of a peculiarly dense fibrous material that resists the spread of the nerve-fibrils and finally encloses them in an impenetrable capsule. Within this limiting substance the growth of axis cylinders continues, but since there is no exit it can result only in the formation of an intricate and aimlessly convoluted network.

Breaches of the Spinal Theca.—It occasionally happens, usually, perhaps, in connexion with the avulsion of a spinal nerve, that a subcutaneous laceration of the spinal dura occurs. More commonly the surgeon has an opportunity of studying the effect of breaches of the theca in cases where a laminectomy with incision of the membranes has to be followed by a second similar operation after some weeks or months. We find then that wherever the cerebro-spinal fluid has been able to escape into the tissues it has been everywhere walled off by a dense impervious membrane so that, according to the extent to which the fluid has made its way, there will be a more or less complicated series of cyst-like spaces communicating with the intrathecal cavity. It is the wall of these cystic extensions of the theca that is of interest, for it shows all the characters of the normal dura. It is of a dense fibrous substance, its inner surface is smooth and glistening, and its outer surface, instead of merging with the surrounding tissues like a scar, is easily separable from them along a well-marked line of cleavage.

Regeneration of the Cerebral Dura.—It is not uncommon for a second cerebral operation to be necessary in a case in which the dura mater has already been opened or removed. If the second operation is done after an interval of about six weeks or more it will be found that the gap, however large, that was left in the dura at the first operation has been closed by the formation of a new membrane having all the characters of normal dura as above described. Among such characters the most striking, and perhaps the most conclusive of the nature of the new membrane, is its differentiation from the overlying scalp, so that the latter can be stripped away from it with ease and without bleeding. It is interesting to note that at one time a great deal of surgical ingenuity was expended on evolving a plastic surgery of the dura in which gaps were closed by the insertion of fascial grafts. Such grafts were always remarkably successful because a new dura would have formed quite naturally and equally well without them.

Here we have a group of three well-defined facts established by countless observations and capable of confirmation at any time. They bring evidence from different parts of the nervous system disclosing even to superficial consideration a clear common tendency. The conclusion to which all point is that breaches of the normal coverings of the nervous tissues allowing contact between the latter and other tissues of the body result of necessity in energetic local reactions. The obvious function of such reactive processes is to re-establish the normal discontinuity between neural and somatic tissues and to break the contact that has caused the disturbance.

We have met then, with a mechanism of a definitely physiological type which may well prove to be concerned with the very nature of the nervous system. Our next inquiry will naturally be what is the immediate agent of the reaction we are concerned with. In the case of the divided nerve it seems clear that the escaping naked axis cylinder is the actual irritant substance; in the case of the spinal theca it is evident that the cerebro-spinal fluid is the effective agent; in the case of the cerebral dura it is probable that in ordinary conditions with an intact arachnoid, fluid exuding through this is the excitant, though the contact of the brain itself is doubtless also effective. It is seen then, that there is a common property possessed by naked nerve-fibres, by cerebro-spinal fluid, and almost certainly by the brain substance itself, which enables these to set up in the somatic tissues an energetic reaction the tendency of which is to insulate the one from the other. There is evidence that the neural side of the contact, while effective as an irritant, does not contribute to the newly-formed tissue which, whether in the form of the fibromatous material of the bulbous nerve or in that of the extemporised dura is of purely non-neural origin though obviously a highly specialised material and no mere scar.

FUNCTIONAL EFFECTS OF BREACHES IN INSULATION.

When we see such well-defined mechanisms for the sealing of breaches in neural insulation we naturally should expect to find such breaches to be of great functional importance and capable of causing serious disturbance in the tissues unnaturally brought into contact. There is, in fact, evidence that some effect

on function is produced, but it is not to the mere prevention of this that we can look to explain the actual existence of these mechanisms themselves; that seems to depend, as we shall see, on some far more fundamental causation. The chief evidence of disturbed function is seen in the case of the divided nerve. Here there are symptoms suggesting persistent excitation of the cut end. These are always present from the first, but they vary greatly in intensity. The sensation of the presence of the limb after an amputation is universal, and it always lasts for several weeks. Not uncommonly it is painful, and then it tends to be more persistent and may last for years. The facts suggest that the exposed nerve-fibres of the stump are excited by contact with the tissues and that in the bulbous end the stimulation effect gradually dies down until a state of equilibrium is established in which the new tissue sealing off the nerve end is practically as inert towards the nerve as is its normal sheath.

It is natural to suppose that, after a wound of the brain which allowed a scar of non-neural origin to come into close contact with the brain substance a state of excitation might be set up. The frequency of traumatic epilepsy in cases of direct scarring of the brain is perhaps suggestive, but I know of no evidence that allows us to take the case beyond a mere suspicion.

On the somatic side of a breach of neural insulation there is no disturbance of function beyond the mere reaction already described. It is indeed characteristic of this that it is always and only strictly local. There is nothing in the way even of a diffuse or spreading fibrosis, the new tissue whether it be an amputation neuroma or a new segment of dura, and although it is of somatic origin, becomes sharply differentiated from the tissues it is derived from and can be separated from them easily without cutting. We see therefore that although breaches of neural insulation are immediately dealt with by energetic, effective, and highly specialised mechanisms, the actual disturbances of function produced by such breaches do not seem to be very important.

Insulatory Arrangements in the Normal Nervous System.

If the evidence I have cited bears the meaning I have given it and we can regard as of high importance to the body the maintenance of neural insulation, then we can look for confirmation in normal structure and expect to find dispositions in relation to the nervous system which are insulatory in function. From the nature of the reaction we have seen to be set up by breaches of insulation we may infer that the influence against which insulatory mechanisms are provided is chemical in kind, and this inference may serve as a guiding principle in the search.

Insulation of the Peripheral Nerves.—Beginning our survey with the peripheral nerves, we may at once dismiss from consideration the medullary sheath which, whatever its physical insulatory function may be, is clearly not in question as a chemical insulant, since non-medullated nerves lie as peacefully and as inert in the tissues as the medullated. The case is different, however, with the neurilemma. Here we have a sheath common to all nerves outside the central axis, and continuous without a break from spinal cord or brain to end-organ. The motor nerve-fibre is clothed from within the central nervous system to the muscle-fibre, where the neurilemma completes the sealing off of unnatural contacts by becoming continuous with the sarcolemma itself. The sensory fibres are similarly clothed throughout their length; at their peripheral termination they enter end-organs, all of which throughout a great variety of structure show—with one suggestive exception—so marked an encapsulatory arrangement that one cannot but think that here the need for insulation must be especially vital. The one sensory nerve-fibre which is known to terminate in an end-organ which is not of a strongly capsular type is the fibre that serves the sense of pain. This fibre ends in a free arborisation in the tissue to which it is distributed and this terminal part is uncovered by neurilemma. It cannot but strike us as significant, though I shall not take up the point further at the moment, that this anomaly of a sensory fibre making naked contact with the somatic tissues, should be a character of the fibre concerned with pain, a form of sensibility that in itself is so profoundly anomalous.

The view that the neurilemma is the chemically insulating structure we are looking for is confirmed by the fact that within the central nervous system where insulation is otherwise provided it is defective or altogether absent. A point further suggestive of the importance of insulation in the peripheral nerves is the evidence we have that there is an upward drainage along their trunks, so that the products of their metabolism are probably kept from contact with surrounding tissues and are conveyed into the central theca.

Insulation of the Central Nervous System.—When we turn to the central nervous system we find that the method of individual insulation no longer prevails, but that the whole mass of the central axis is protected as one unit. Plainly, of course, it is the meninges which are chiefly concerned. Of these we have already seen that the dura has so important a function that accidental defects in it are repaired with very remarkable rapidity and completeness. The *mechanically protective* function of the dura which doubtless has its importance can scarcely be regarded as explaining its peculiarly impervious texture, its double endothelial surface, and the marked line of cleavage that separates it even when newly formed from the surrounding tissues. All these, however, acquire meaning when they are regarded as evidence of its *chemically insulatory* capacity. Effective as the dura doubtless is in its way, it deals only with one relatively small part of the problem of insulation. If we are right in supposing that all neuro-somatic contacts are inadmissible, and that the blood and blood-vessels belong to the somatic side of the frontier, the nutrition of so large a bulk of nervous tissue as the central nervous system must involve dispositions altogether unique in the body, and we should expect in regarding the circulatory mechanisms of the part from this point of view to meet with features of a very special kind.

The cerebro-spinal fluid and its circulation, the existence and disposition of the multiple membranes of the brain, and the absence of a recognisable lymphatic system in the ordinary sense of the term, constitute a picture which is unique and has admittedly defied thorough explanation. Let us consider it in relation to the avoidance of undue contact between neural and non-neural elements.

The Cerebro-Spinal Fluid.

Let me briefly review the strange facts of the physiology of the cerebro-spinal fluid as they are now known. The cerebro-spinal fluid is an extremely dilute secretion profusely poured out by the choroid plexuses of the cerebral ventricles. It flows through the central cavities of the brain and issues therefrom through the roof of the fourth ventricle into the sub-arachnoid space. Through this so-called space, which has rather the structure of a cellular spongework, it courses, partly into the spinal canal but chiefly upwards and forwards over the brain to escape into the venous circulation through the arachnoid villi that project into the various lateral extensions of the superior longitudinal sinus. As is well known, any obstruction to the flow in any part of this intricate course downwards within the brain and upwards outside of it inevitably leads to an accumulation of the fluid and to hydrocephalus. Such obstructions are easily produced and common. The cerebro-spinal fluid with its circulation, whatever function it may be there to perform, shows itself thus to constitute a weak spot in the cerebral organisation that, as it were, invites pathological attack. That the cerebral apparatus should contain an arrangement in some ways so seriously disadvantageous suggests that the mechanism must have some deep functional

significance that is indispensable to the physiology of the body.

There is no lymphatic system in the ordinary sense in the brain or spinal cord and no flow outwards through the cerebro-spinal envelopes of anything corresponding with lymph occurs anywhere. It seems clear that products of nervous metabolism find their way into the cerebro-spinal fluid in the subarachnoid space; there is, in fact, strong clinical evidence that this fluid has a definite toxicity for the rest of the body, for when it is liberated into the tissues high fever is apt to occur during the short period before absorption is arrested by the inevitable reaction in the tissues that produces encystment. It is thought that metabolic products reach the cerebro-spinal fluid along the so-called perivascular lymphatics. These remarkable structures are tubular extensions of the subarachnoid space which accompany and enclose the vessels that penetrate the brain to their finest ramifications. The interpretation of their meaning has long been regarded as a great difficulty, but if we accept the view that somatic structures like the blood-vessels cannot be admitted to direct contact with the nervous tissues it is natural to regard the perivascular lymphatics as mechanisms to insulate the blood-vessels from this contact. It may be assumed from what we know of the nourishment of tissues in general that there is some kind of leakage from the cerebral tissues comparable with lymph as found everywhere else and presumably of a not dissimilar concentration. This fluid will find its way to the subarachnoid space presumably by the perivascular channels. The disposal of such a material may well be regarded as an exacting task. It is impregnated with products of nerve metabolism and is an eminently "neural" fluid capable of producing energetic reactions in any somatic tissue it meets. Thus there can be no question of its entering the blood stream in the relatively high concentrations that are satisfactory for lymph, and Nature meets the case by providing for it being heavily diluted before it is allowed to join the somatic blood in the cranial sinuses.

The most characteristic feature of the cerebro-spinal fluid as it exudes from the choroid plexuses is its remarkably low solid content. It is by far the most watery secretion produced by the normal body, and one might almost say it is an attempt by Nature to secrete pure water. It contains a small amount of the diffusible substances of the blood, but practically nothing else. So strong is the tendency to keep the fluid watery that the choroid plexuses have a truly astonishing impenetrability to drugs and other foreign substances circulating in the blood. Even the bile-pigments in cases of jaundice fail to find a passage. This fluid, practically amounting to nothing but water, is secreted in large quantities; on rare occasions I have had the experience of seeing as the result of accident what was, perhaps, a large fraction of the total secretion of cerebro-spinal fluid discharged on the surface. The amount of fluid escaping has been very large and the consequent inanition correspondingly profound. The normal function of this great flow of water we may suppose with some confidence to be to flush through the whole subarachnoid space and to dilute the products of cerebral metabolism to such a degree that the resulting fluid can be safely admitted to the general blood stream. This view gets some confirmation from the evidence we have that the fluid in the subarachnoid space has a larger solid content than the fluid in the ventricles.

It is interesting to reflect that the source of this mysterious secretion which has given so much difficulty to the chemical physiologist may turn out to be no more abstruse a thing than Nature's nearest approach in the animal body to a spring of plain water; if this should be so it may also remind us of the small and amusing coincidence that one part at any rate of the tortuous channel through which the fluid runs—the *aqueduct of Sylvius*—has since the very early days of anatomy borne a singularly exact and appropriate name.

In our review of certain aspects of the nervous system we have found reason to regard as of fundamental importance the preservation of an impenetrable barrier between the whole of the nervous system and the rest of the body. This barrier we have seen to be made up of a number of highly special structures and mechanisms. Its function is, on the whole, to prevent contact between the neural and the non-neural, but is also in certain places to permit it. These places are only two: first, where the motor nerve-end comes into contact with the muscle-fibre, and secondly, where the naked arborisation of the pain nerve meets the tissue in which it is distributed. The nervous system is thus kept apart from the body, as we may say, in order that when the two are permitted to meet the reaction shall be the more energetic. It is in fact, then, of the very essence of nervous tissue that it should be different from the other tissues so that it can irritate and be irritated by them. This necessity for a certain "strangeness" of the nervous system may possibly throw some light on its curious embryology. The origin of the nervous system as an epiblastic tube originating on the surface of the body and then sinking into its substance has been investigated chiefly from the morphological point of view, and great ingenuity and research have been expended on it. It may be worth suggesting, however, that the problem has also a functional side, and that the epiblastic origin of an organ that is ultimately to be deeply embedded in mesoblastic tissues possibly has the function of contributing its strangeness and, therefore, its effectiveness to the nervous system as a whole. This quasi-hostility between neural and somatic, between brain and body, is a suggestive and perhaps a disturbing thought, but we shall not attempt here to follow it out.

NEURAL INSULATION IN PATHOLOGY.

It is more convenient at the moment to consider certain pathological evidence that has some bearing on the conclusions we have already reached. That the central nervous system differs from other organs in having a certain inaccessibility has long been recognised in connexion with syphilis. The difference between the strictly extraneural mesoblastic infection of the meningeal gumma on the one hand, and the intraneural parenchymatous infection of general paralysis on the other, shows that the frontier between the two regions is as sharply marked pathologically as it is physiologically. Moreover, the relative inefficacy of antisyphilitic treatment in the parenchymatous infection reminds us that the frontier is also impassable for many drugs.

The dura and arachnoid are in some sense intermediate tissues for they show a certain tolerance for both neural and non-neural contacts, the arachnoid having slightly greater affinities for the former, and the dura perhaps for the latter. That they are, however, fundamentally non-neural in their behaviour, and probably also in their nature, is suggested strongly by their relations to certain tumours. The glioma is probably the one truly neural tumour that affects the central nervous system. Although it behaves within the brain as a malignant infiltrating growth, its spread is restrained by the neuro-somatic barrier, so that while in exceptional cases it may affect the meninges and skull by pressure atrophy it can never invade them or extend to the tissues of the body. On the other hand, the so-called "dural endothelioma" which is relatively so common as a growth involving arachnoid and dura, frequently shows the power to infiltrate the skull and overlying parts as a malignant neoplasm; but although it may press deeply into the brain it never invades it, being restrained as effectively in the one direction as is the neural glioma in the other. The behaviour of these two tumours has long been familiar, but seems always to have been accepted as very much a matter of course. It is perhaps more reasonable to regard it as one of the most significant anomalies in the whole of pathology.

Our final pathological illustration takes us back to the peripheral nerve. We have already seen that this is the only part of the nervous system where a breach of insulation produces immediate and definite

disturbance of function. The neurilemma seems fortunately, however, to be an exceedingly effective barrier between neural and somatic tissues. There is clinical evidence that a relatively slight subcutaneous injury can lead to the formation of a neuro-fibroma presumably through damage to the neurilemma; but this is a rare event of little practical importance, and failing gross injury the insulatory mechanism is wholly satisfactory. That this is the result of effective restraint rather than inertia on the side of the nervous system is perhaps shown by that fortunately rare complaint multiple neuro-fibromatosis or Recklinghausen's disease. In this condition it has been shown that every fibromatous formation, localised or diffuse, contains nerve-fibrils which presumably by their irritant qualities have given rise to the fibrosis much as might a foreign body or a micro-organism of highly attenuated virulence. It seems clear that it is the presence on a large scale of nerve-fibrils outside their normal insulating sheath which is the proximate cause of the morbid state. It may be doubted whether the neural leakage is a primary manifestation or is due to an essential weakness or collapse of the insulating function of the neurilemma. Whether the failure of this sheath is primary or secondary, absolute or relative, no one who has seen a severe case of the disease can doubt that any general collapse of the peripheral insulatory mechanism makes the life of its unfortunate subject almost insupportable.

INSULATION AND THE PHYSIOLOGY OF PAIN.

I have already called attention to the remarkable fact that there is one kind of sensory fibre which ends in a free arborisation in naked contact with the tissues. Our last task in dealing with the insulation of the nervous system is to examine a little more in detail the striking anomaly that in their end-organs the pain fibres make this unique exception to the rule that sensory fibres are insulated up to and including their end-organs.

This anatomical uniqueness of the pain fibre in its end-organ is matched by the uniqueness of the physiological characters of pain sensibility, and it is very natural that we should desire to correlate these two anomalies. Pain sensibility is remarkable in three respects, first in the quality of the sensation itself, secondly in its threshold of sensitiveness, and thirdly in the nature of its appropriate stimuli. (*a*) The *sensation of pain* is peculiar in that it has a sudden and as it were explosive way of bursting into consciousness, in that it calls urgently and often irresistibly for some kind of motor response, and in that it is in its very nature distracting so as to be incompatible with quiet contemplation or steady judgment. (*b*) The *threshold for pain* stimuli is remarkably high, so that in comparison with other forms of common sensibility the stimulus has to be relatively energetic to call forth the characteristic sensation. (*c*) The stimuli that call forth pain sensations are remarkable for being very miscellaneous. In every other kind of sensibility but pain, the normal response is to a single well-defined physical change—pressure is evoked by weight, touch by movement, cold by loss of heat, warmth by access of heat. The ordinary stimulants of pain, on the other hand, such as pressure, pin-pricks, cold, heat, and the electric current make up a thoroughly odd class, the members of which show no common character. They are all capable of producing the characteristic sensation before, and usually long before, an intensity of stimulation is reached that can be shown to be harmful. That many of the stimuli would be harmful in greater intensities can scarcely therefore be regarded as forming a common physical basis, but must rather be explained as merely a consequence of the normally high threshold.

When we consider these peculiarities we can hardly regard them as those of a highly differentiated mechanism, but rather as those of one relatively crude. All sensibility may well have been of this kind in organisms to which the distracting explosive qualities of the sensation would be no detriment. If we look upon the peculiarities of pain as an evidence of crudity rather than of differentiation it is relatively easy to correlate them with the uninsulated end-organ of the pain fibre which we must regard as less differentiated and cruder than the complex end-organs of the other fibres. Pain sensibility would thus owe its special character to being the function of a nerve-fibre of a peculiar kind, which while relatively insensitive responds in an exaggerated way when its threshold is reached. Presumably these characters are to be associated with the uninsulated end-organ, and we may suspect that it is this lack of insulation which gives to the fibre its characteristic features of blunt sensitivity and emphatic response.

We possess a possible source of further light on this problem in the phenomena that accompany the recovery of function in sensory nerves after division and immediate suture. It is well known that this process as observed under experimental conditions in the human subject by at least three independent groups of investigators, is accompanied by remarkable modifications in all forms of sensibility. It is impossible to refer to these modifications in detail, but it gives them in a broadly approximate way—and I speak from actual personal experience of them—to say that they are generally in the direction of the peculiarities shown by normal pain; in other words, the modified sensations compared with the normal are more explosive and more urgent, they have a higher threshold, and they call for some kind of motor response. The explanation of these and the other modifications that are to be observed during recovery of sensory nerves has differed with different investigators. It is far too much a matter of detail to discuss these differing hypotheses here, but there is one criticism to be offered of some that is relevant to the general attitude we have tried to support. This criticism is that there has been a tendency to approach the problem in too abstract a way. It has been assumed that the question is one of the mere return of functions that are present in the normal and in the form in which they are then present, modifications in the character of sensation being ascribed to such factors as the order of return and the rate of return of different functions, and the modification in character of one form of sensibility to the presence or absence of another. This is to assume that the processes and incidents of regeneration itself have nothing to say to the problem; and that the struggle between the advancing nerve-fibres and the reaction they arouse from the line of suture onwards can be ignored. To take it for granted that the naked growing fibres can pass through this difficult and prolonged ordeal without any alteration in their function, and to limit the problem in this way to strictly and exclusively neural factors, seems to me a method less concrete and practical than the case demands.

An alternative hypothesis, which is at any rate more comprehensive and more simple, can, however, be put forward. The general tendency of all forms of sensation yielded by a regenerating nerve to develop a certain resemblance to pain reminds us that regenerating fibres resemble pain fibres in a lack of complete insulation. It is probable, therefore, that imperfect insulation tends to render all fibres less sensitive than normal but more apt when effectually stimulated to respond in an exaggerated explosive way. With the advance of regeneration the fibres serving touch, heat, and cold become once more connected with end-organs, and then their insulation, by the junction of the neurilemma with the capsule of the end-organ, can be completed. The completely insulated fibre, having lost its temporary resemblance to the pain fibre, becomes once more sensitive to the finer stimuli and ceases to yield exaggerated responses.

The process of regeneration thus seems capable of causing a regression of function in all kinds of nerve-fibres to a cruder type that in the normal is represented only by pain. This regression occurs because during regeneration insulation must necessarily be defective. According to this hypothesis normal pain and the sensibility of regenerating nerves give us an insight

into the ancestry of common sensation. Primitive sensibility of all kinds we may suppose to have been like pain in us; it had a relatively high threshold, but it was effective because its sensations were urgent and explosive and, of course (also like pain in us), were exactly localised. Among such sensations fine discrimination was plainly impossible. With the development of the completely insulated nerve and end-organ, the fibres thus equipped became capable of yielding sensation to finer and to specialised stimuli, and of a quality no longer explosive but able to be submitted to discrimination; at the same time the large number of pain nerves remained in their primitive state to warn the body of strong stimuli by urgent sensations, among which there was no power and no need for discrimination because their function was to excite immediate response.

The great and manifest difference between the vertebrate and the invertebrate nervous systems is that the former is centralised and the latter is scattered throughout the body. The facts I have quoted and the inferences I have drawn suggest the hypothesis that side by side with centralisation and rendering it possible, insulation also must have proceeded. Insulation, on the one hand, must have been made increasingly necessary by the growing differentiation of neural from somatic tissues, and, on the other hand, must have helped to sharpen this very difference. It is not, therefore, surprising that a function so fundamental is not only recognisable in the structure and behaviour of the normal nervous system, but is also evidently at work in morbid processes and constitutes at once a help and a limitation to the work of the surgeon.

FURTHER OBSERVATIONS ON IMMUNITY IN RELATION TO TRANSPLANTABLE MALIGNANT TUMOURS.

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THE conclusions arrived at and reported in previous communications in THE LANCET [1] have been confirmed and extended. The further experiments described below were mostly designed towards supplying an answer to the following questions:—

(A) What is the nature of the antibodies which can be demonstrated to exist in the serum of an animal (e.g., rabbit, sheep, horse) which has been repeatedly inoculated with tumour cells from another species (e.g., mouse, rat, man)?

(B) When by treating one of two coexisting tumours both are caused to disappear, may we conclude that products absorbed from the regressing treated tumour effect the cure of the untreated tumour by giving rise to antibodies in the host's blood or tissues?

(C) When an animal has been rendered resistant to a particular tumour wherein does its immunity consist?

The methods employed in these investigations were (except where detailed below) those described in the papers above referred to.

Antiserum Treatment in Vivo.

To 50 rats bearing a J.R.[2] sarcoma of each hind foot, varying in size from a green pea to a haricot bean, treatment was applied as follows:—

In 38 rats 0·9 c.cm. of anti J.R.S. serum was injected in three doses of 0·3 c.cm. each, the circulation in the foot being coincidentally shut off by constriction at the ankle for 2–3 hours. In all of these animals the tumour of the treated foot disappeared rapidly, while in 37, about 7–10 days later, regression began also in the untreated foot and went on to complete cure. In one rat, probably because the treated tumour was too severely constricted, the untreated tumour grew progressively. The fact that in these cases the untreated tumour only begins to absorb from 7–10 days after the cure of the treated tumour, indicates that the regression is not spontaneous but is due to treatment. This view is corroborated by the fact that of the 50 control untreated animals only in five did the tumours regress. Fig. 1 shows the condition of the tumours in the last 24 controls when the experiment ended; it will be noticed that in all except two of these, progressive tumours have developed. In 12 rats of this series of 50, cure was effected without constriction by means of repeated inoculations of antiserum into and around the tumour. Of this dozen animals, in six the antiserum used was one made against mouse carcinoma (M_{63}). Even in these 12 rats it is possible that part at least of the curative effect was due to interference with the vascular supply, for not infrequently hæmorrhages occur into the tumour after the antiserum has been injected.

In a previous paper [3] it was reported that after cure of their feet in the above way rats were found to be absolutely immune to the tumour concerned. It is now possible to state that this immunity is of long duration. A test inoculation was given to 50 rats six months after their recovery. Of these, only two developed progressive tumours, the other 48 were still completely resistant to a sarcoma which grew rapidly in all of 12 normal animals inoculated with identical material at the same time. It must here be reiterated that *striking results can only be obtained by using a tumour of great virulence and in its most active phase*, otherwise so many of the control tumours might regress as to lessen the cogency of the experiment.

In a large number of animals the attempt was made to cause the disappearance of tumours of each flank in the above way. The results were not very satisfactory. The tumours grow so rapidly as to cause death in three or at most four weeks. Thus the untreated tumour attains enormous proportions before the regression of the treated tumour can influence its growth, by which time the defence mechanism of the animal appears to have broken down completely. In the last 20 animals a second tumour was inoculated a week later than the tumour which it was intended to treat. Of these animals, in six regression of the treated tumour was followed by absorption of the untreated tumour and the animals were thereafter found to be immune; in ten the attempt to cure the larger tumour failed and both tumours grew progressively, while in four rats the treated tumour was so severely constricted that it separated after a day or two and no effect was produced on the smaller untreated tumour. *It appears that in order to effect cure and evoke immunity gradual regression of the treated tumour is essential.*

Attentuation.

Many attempts were made to attenuate J.R.S. cells (by heat, by cold, by autolysis, and by treating the cells in vitro with antiserum, &c.), so that when inoculated into a tumour-bearing animal an effect comparable with that produced by gradual regression of one of two tumours should be obtained. These attempts were unsuccessful. Frequently attenuation was not carried far enough and a fresh tumour arose at the spot where the attenuated cells were injected. Even when this did not happen not only was it found impracticable to cure an animal in this way, but the attempt to produce immunity to a subsequent test inoculation also failed. The only successful experiment, inconclusive on account of the small number of animals used, was one in which J.R.S. fragments coated with agar were injected into three rats bearing a tumour and into three healthy rats. No curative effect was noticed but the three healthy rats were found two weeks later to be immune, while three control rats of similar breed, given a test inoculation with the same material, all developed

[1] THE LANCET, July 12th, 1924, and Feb. 21st and Sept. 12th, 1925.

[2] J.R.S. is an abbreviation for Jensen's rat sarcoma; M_{63} for the mouse carcinoma, so named by the Imperial Cancer Research Laboratory.

[3] THE LANCET, Sept. 12th, 1925.

progressive tumours. This modification, suggested by Dr. P. Bruce White, will be repeated, using a arger number of rats.

A. *Nature of Antibodies Demonstrable in Heterologous Antisera.*

In the attempt to elucidate this point a very large number of experiments have been made.

The following antisera have been produced and tested on many different tissues growing in vitro: Anti-J.R.S. from 6 rabbits, anti-J.R.S. from 1 sheep, anti-J.R.S. from 1 horse, anti-human-cancer from a sheep, anti-rat-kidney from 1 rabbit, anti-rat-tissues generally from 1 rabbit, anti-rat-tissues (except kidney) from 1 rabbit, anti-M_{63} from 6 rabbits, anti-M_{63} from 9 rats. Twelve rats which had been cured of two foot tumours and were thereafter immune have been "hyper-immunised" by injecting into them 1 c.cm. of minced J.R.S. subcutaneously or intraperitoneally each week for 2–3 months.

In all cases before beginning to make an antiserum from a heterologous animal its serum should be tested in vitro on the normal and tumour tissues of the species from which the antigen is to be taken. This is advisable, because it will be found that the sera of many rabbits, for instance, normally have a lethal effect on rat or mouse tissues and tumours. When this is so an antiserum from such a rabbit will kill tumour cells in vitro, but may not do so with any great specificity.

The method used in testing these sera was to culture on the same coverslip two fragments of tumour (with or without normal tissues) in separate drops of normal serum. On the first, second, or third day, when growth was well established, one of these drops was replaced by antiserum and the other by an appropriate normal serum for control. In this way all the conditions, except the sera to be tested, were alike.

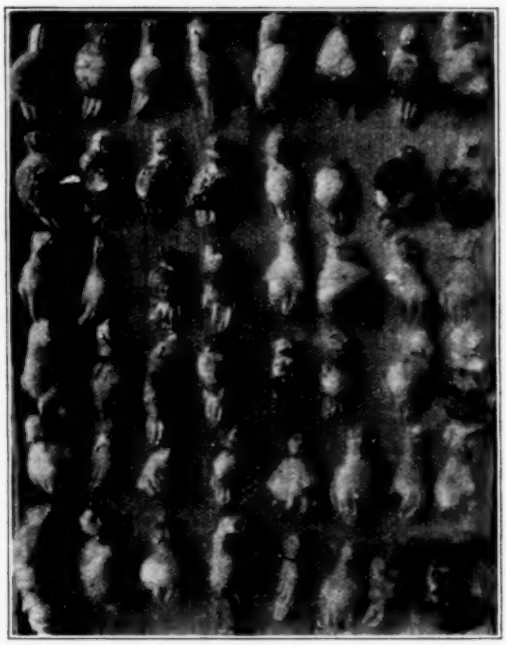
When anti-M_{63} serum from a rat is thus tested it is found to kill mouse cancer cells rapidly. They never move again after the antiserum has reached them and in 10–20 minutes the other changes characteristic of chromatolytic death [3] appear.[4] The normal mouse tissues (heart, kidney, salivary gland, spleen) are much less, if at all, damaged. This antiserum has no lethal effect on J.R.S. cells, in vitro, but if an anti-M_{63} serum, made from a rabbit, is applied to a culture of J.R.S. and normal rat tissues the tumour cells are rapidly killed, while the normal tissues survive but grow less vigorously than the controls in normal rabbit serum. Conversely, if an anti-J.R.S. serum is applied to M_{63} cells and normal mouse tissues, the malignant cells die rapidly, the normal tissues survive. This interchangeability of certain anti-malignant sera might mean that we are dealing with (1) anti-malignant antibodies, (2) anti-mouse-rat group immune bodies, or (3) both of these may be present. Since the anti-M_{63} serum from a rat does not kill J.R.S. cells while anti-M_{63} serum from a rabbit does, we may infer that the latter serum is lethal to sarcoma cells by virtue of the anti-rat bodies which it contains.

The following results shed further light on the question:—

1. *Antisera to Normal Rat Tissues.*—Such antisera, if made from a wide range of rat tissues and organs, kill all normal and malignant cells of both rats and mice, but even to such sera the malignant are definitely more susceptible than the normal tissues. When, however, an antiserum is made to a particular organ alone, the antibodies to the antigenic organ may attain so high a titre that if, say, anti-rat-kidney serum is applied to a culture of rat sarcoma or mouse cancer, and rat or mouse heart and kidney, the malignant cells, though they show signs of damage even more rapidly than the kidney carpet, sometimes recover while the renal cells never do so. The heart muscle cells continue to grow and show mitotic division in an appropriate dilution (1 in 4) of such a serum (Fig. 2).

This special lability of the cancer cell to antibodies is all the more striking since to every other agency which has been tested by me the malignant cells (especially M_{63}) are more resistant than normal cells. Thus, after growth is well established, a culture of M_{63} will survive, even if it is not re-fed, for three weeks.

FIG. 1.



Photograph of specimen jar containing both hind feet of 24 control rats inoculated with Jensen's rat sarcoma. Progressive tumours have developed in all save two feet. The figure shows that when a virulent strain of tumour is employed spontaneous regression does not take place, except in a very few instances.

Under these conditions the normal tissues die after a week or ten days. To ultra-violet rays,[5] radium (γ rays), bacterial infection, &c., mouse cancer cells are much more resistant than the normal tissue cells when cultured in serum.

2. When an anti-J.R.S. serum from a sheep is absorbed with normal rat tissues it still proves fatal to J.R.S. cells in vitro. The absorbed serum is non-toxic to normal rat tissues. The dying sarcoma cells do not, however, in this case show all the typical signs of chromatolytic death.

3. Perhaps the most specifically anti-malignant of all the sera tested is the antiserum obtained from a sheep which has been repeatedly inoculated with human mammary cancer and human breast tissue. When this is applied to mouse cancer cells cultured in vitro it kills them in exactly the same way as anti-M_{63} serum does, and almost if not quite as quickly. They are dead within 5–10 minutes. This human cancer antiserum is entirely non-toxic to mouse heart and kidney, and even mouse skin, spleen, and salivary gland survive its application. The reaction is so exceedingly specific that where cancer cells have invaded (as they frequently do) a growing carpet of normal cells they are picked out and killed instantly, while the surrounding normal

[4] When a culture has been killed by antiserum, it may be set aside at room temperature for weeks or months without any further changes occurring in it, apart from those characteristic of chromatolytic death, which appeared within the first few hours after application of the antiserum. No autolytic disintegration takes place. The cells appear to be fixed just as if any ordinary fixative had been made use of. Whether this is due solely to the chromatolysis, or results from destruction of ferments normally present in the cells has not been ascertained. This point will be further investigated. It is possible that ferments may be an essential factor in living antigens: I have at any rate some evidence that dead are less effective than living tumour cells as antigens.

[5] Moppet: THE LANCET, May 1st, 1926.

tissue cells are uninjured and continue to show mitotic division (Figs. 3 and 4). The serum of this sheep tested before it was injected with human cancer was quite a satisfactory medium. Mouse cancer cells grew well in it.

There has been considerable difficulty in obtaining human cancer in a condition which admits of its culture, hence it cannot at present be stated whether anti-M_{63} serum kills human cancer cells in vitro or not. If it does it should contain no anti-human elements, and so should be an excellent reagent with which to attempt the treatment of cancer in man.

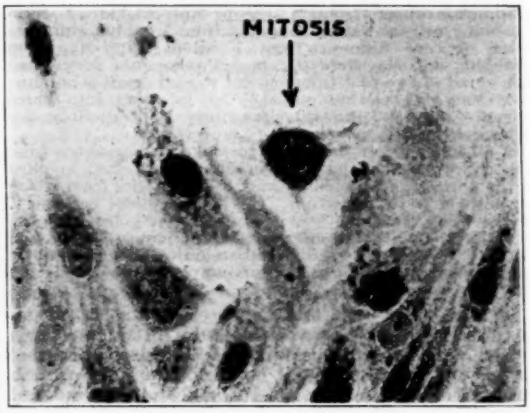
All these rapid cytolytic effects of antisera require the presence of complement, and the addition of a little fresh normal serum reactivates certain antisera which have been kept in the cold room for over a year and which, without this addition, appeared to have lost much of their potency. When no complement is supplied the antisera may still cause agglutination of the tumour cells in vitro and generally, though not invariably, the clumped cells gradually die in some 6–24 hours.[6]

The point cannot yet be regarded as proved, but certain in vitro observations do suggest that cancer cells may have to a limited extent some power to acclimatise themselves to repeated applications of antisera and to other adverse conditions. Although in vitro the anti-human-cancer serum would appear to be an ideal cure for mouse cancer, it does not act as such when injected into the tail vein of a cancerous mouse. Large and increasing doses can be given in this way; 0·5 and later 1 c.cm. of the serum does not kill a 30-gr. mouse. When such a dose is given daily there is definite delay in the enlargement of the tumour, but if after a week the treatment is discontinued the cancer resumes its normal rate of growth. Whether more prolonged treatment will produce cure will be tried as soon as a further supply of serum can be obtained.

The fact that a mouse which is rendered ill by a first dose of 0·5 c.cm. is unaffected by twice that dose a day or two days later may indicate that the mouse has some mechanism by which it gets rid of, fixes, or neutralises the antiserum, and this may to some extent account for the disappointing result of treatment by intravenous injection. It seems doubtful if the antibodies reach the living cancer cells, and if some means can be invented which will ensure this the effects of in vivo treatment should more nearly correspond with the striking in vitro results.

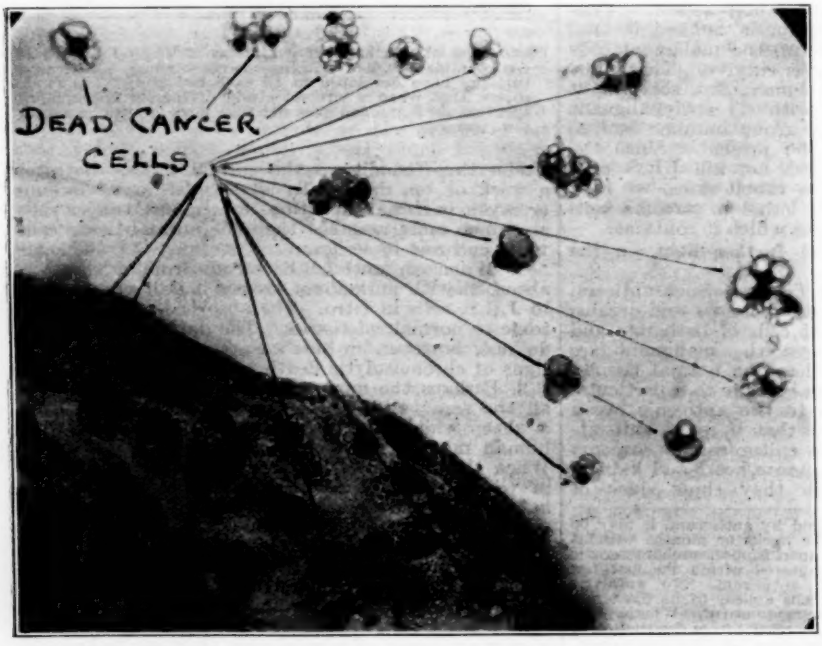
[6] The reactivation of old or heated sera by the addition of complement is not invariable. Thus it was found that when a freshly prepared anti-human-cancer serum, which killed M_{63} cells in vitro very rapidly, was heated to 56° C. for two hours, it had thereafter no deleterious effect on a culture of mouse cancer cells, and the addition of complement did not restore its activity against these cells. We may conclude that in this case heating destroyed some other heat-labile factor besides complement. It had been noticed as the result of many previous observations that while old reactivated anti-M_{63} sera were still very toxic to mouse cancer cells, they had lost much of their specificity. It appears that, while mouse-rat-group antibodies are stable, specifically anti-malignant bodies are labile to heat, and lose their activity rapidly (10–12 days), even when kept at 0° C. This may explain some of the disappointing results obtained with anti-cancer-sera, and may have a wide application to bacterial and other antisera.

FIG. 2.



Carpet of rat heart muscle cells growing freely in anti-rat-kidney serum which had killed an adjacent culture of kidney cells in a few minutes. The specimen was fixed 24 hours after application of the antiserum. (× 500. Hæmatoxylin.)

FIG. 3.



Culture of mouse cancer and kidney fixed six hours after application of anti-human-cancer serum. The cancer cells are all dead and their nuclei are pyknotic. The nuclei of the cells composing the kidney carpet stain normally. (× 500. Hæmatoxylin and Sudan.)

B. *Production of Antibodies in Blood or Tissue of Host.*

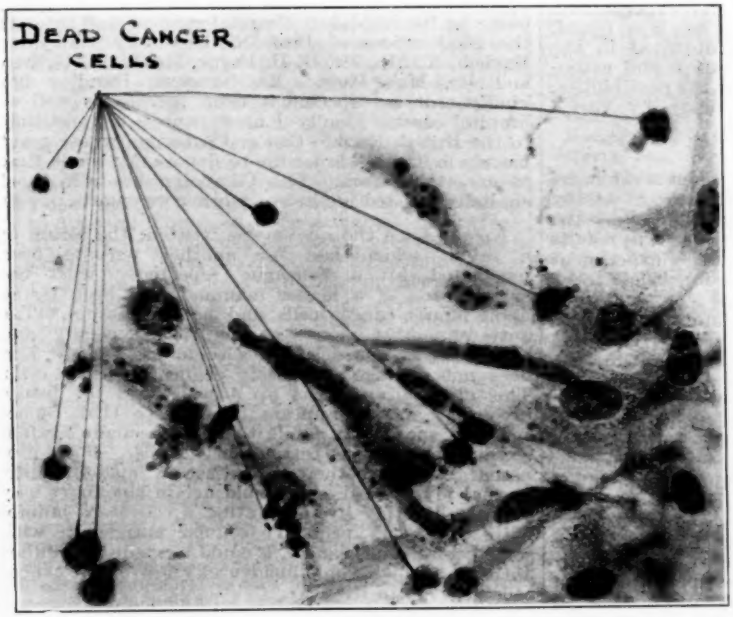
When it was observed that two coexisting tumours both regressed, although only one was treated, it appeared possible that products absorbed from the treated tumour gave rise to antibodies in the host which caused the subsequent absorption of the untreated tumour. To determine whether this was so, the serum of immune and later of "hyper-immunised"

rats was applied to J.R.S. cells cultured in vitro. The J.R.S. cells, so fed, continued to grow as freely as ever, even when abundance of complement was certainly present. There being thus no evidence of antibodies in the serum an extract of many of the tissues of a "hyper-immunised" rat was then added to the rat's serum, but without the least damage to the cultured J.R.S. cells. Yet the rat from which these fluids had been taken was completely resistant to J.R.S. in any part of its body. It was clear, therefore, that there must be some fundamental difference between this "homologous" immunity of an animal to a tumour of its own species and the "heterologous" immunity evoked in a different species—e.g., by injecting J.R.S. cells into a rabbit, sheep, or horse.

To test the matter yet further, fragments of the spleen, testis, or salivary gland from such hyper-immunised rats were grown in the same drop of serum with a fragment of J.R.S. Both fragments grew as usual, the normal and malignant cells intermingling without apparent harm to either. This occurred even when the fragments were grown in the serum of the hyper-immunised rat. To make certain that such an occurrence could not take place in vivo J.R.S. fragments were injected into the testes of anæsthetised "hyper-immune" rats, but (as in all other situations) no tumour resulted. Probably in such instances no stroma is supplied, as was pointed out long ago by Bashford, Murray, and Cramer[7] and others. In the case of the recovery from an untreated tumour, however, subsequent to absorption after treatment of another coexisting growth, stroma must have already been present, so that possibly some other factor is involved as well as the mere refusal to form a stroma. Dr. P. Bruce White kindly examined the serum of such a hyper-immunised rat by means of the precipitin reaction and also by complement-fixation tests; by neither method did he find any evidence of anti-J.R.S. immune bodies in the serum.

[7] Third Scientific Rep. Imp. Canc. Res. Fund, p. 355.

FIG. 4.



Culture of mouse cancer and heart muscle to which anti-human-cancer serum has been applied. All cancer cells were killed in 10 minutes. Not a single heart cell was damaged, and the heart fragment was beating actively when the specimen was fixed 24 hours after the antiserum was applied. The heart cell nuclei stain normally. The cancer cells show complete chromatolysis. (×500. Hæmatoxylin and Sudan.)

C. Possibility of a Nervous Factor in Immunity.

Since no evidence indicating the nature of its immunity could be found in the blood or tissues of a "hyper-immunised" rat the possibility of its resistance being of nervous origin was considered, for a change in some nervous reactivity of the animal might explain the universal distribution of the immunity. It is noteworthy that not only the veins leaving a tumour but also the arteries going to it are enlarged. Now this increase of the arteries before they have reached the tumour area strongly suggests that some nerve-reflex is at work and that it is in response to some stimulus initiated and maintained by the implanted tumour that the arteries going to the area become enlarged and possibly also that a stroma is produced (Fig. 5).

FIG. 5.

Right. Left.

Photograph showing the enormous enlargement of the arteries on the right (tumour bearing) side. The tumour (T), which formed about one-fourth of the weight of the rat, has been almost entirely removed. The arteries have been injected.

In 40 rats an attempt was made to get some evidence on this point. A J.R. sarcoma was implanted in the sole of each hind foot of each rat and the sciatic and femoral nerves on one side were severed, in some cases before, in others after the implantation. If anything the tumours grew rather more rapidly on the anæsthetised foot. It would appear, then, that if any nerve impulse is effective in the way suggested above, it does not pass by the ordinary somatic nerves. It is impossible in so small animals to denude the arteries going to a tumour, but further experiments on this question are contemplated.

Discussion.

There are two ways in which tumour antisera appear to be non-specific. (*a*) They may be non-specific to the animal from which the antigenic tumour was taken. Antiserum made in a sheep by inoculating it with human mammary carcinoma kills mouse cancer (M_{63}) cells in vitro almost instantly, while it does not kill rat or mouse normal tissues. (*b*) Antisera may be non-specific to the particular antigenic tumour. Any antiserum to J.R.S. made from a rabbit or sheep kills in vitro M_{63} almost as rapidly as J.R.S. and, conversely, anti-M_{63} from a rabbit kills J.R.S. cells

rapidly. This may be due to the presence of anti-mouse-rat group antibodies, a supposition favoured by the facts that anti-M_{63} serum from a rat does not kill J.R.S. cells in vitro, and that anti-rat antibodies made by inoculating a rabbit with normal rat tissues kills both J.R.S. and M_{63} cells even more rapidly than they kill the normal tissues.

The indication from the above observations is that when a carcinoma is injected into a heterologous animal it calls forth at least two varieties of antibodies: (*a*) Anti-carcinoma antibodies, (*b*) antibodies to the group of animals from which the antigenic cancer was taken. It would appear to be by means of (*a*) that anti-human cancer serum kills M_{63}, and by antibodies of type (*b*) that all rabbit antisera (made to rat or mouse tumours) kill when of high titre any variety of tumour cells from rats or mice, whether they are carcinomatous or sarcomatous. Malignant cells appear to have a special lability to antibodies of almost any sort, for, as mentioned above, they are even more susceptible to a pure anti-rat serum than the antigenic rat normal tissues themselves. Where, however, a single organ—e.g., kidney—is used as an antigen, so high a concentration of specifically anti-kidney antibodies may be obtained that the kidney cells are even more certainly killed than the cancer cells when a diluted (1 in 3 or 1 in 4) serum is used. The general impression got from application of 22 different antisera to somewhere between 400 and 500 cultures is clearly that both (*a*) and (*b*) group of antibodies are present in an antiserum made by inoculating into a heterologous animal any tumour as an antigen.

The absence of antibodies in the serum and tissues of a "hyper-immunised" rat answers in the negative the second question set out at the beginning of this paper.

The mechanism of acquired immunity to a homologous tumour is still obscure, but there is reason to hold that it is not brought about by means of antibodies, such as are found in the serum of an animal into which heterologous tumour cells have been injected.

The possibility that acquired immunity consists in the desensitisation of some nervous mechanism cannot entirely be ruled out, but no experimental evidence in favour of this hypothesis has been found.

The negative results sometimes obtained in the treatment of flank tumours, attenuation and neurotomy do not, by any means, exhaust the possibilities, and further experiments will be made by varied methods and with different antisera.

Conclusions.

1. It is confirmed (50 cases) that when a rat bears a J.R. sarcoma on each hind foot, the cure of one by injection of antiserum is invariably followed by the regression of the other untreated tumour. The results obtained when attempting to repeat this experiment with two tumours of the flank were much less satisfactory, for reasons explained above.

2. A rat cured as above is absolutely immune to J.R.S., and test inoculations do not produce tumours, yet sarcoma cells grow freely in vitro in the serum of such a rat, even when by repeated weekly injections the animal has been "hyper-immunised."

3. If the tissues (spleen, testis, salivary gland) of such a hyper-immunised rat are cultured in the same drop of this rat's serum as a fragment of sarcoma, both normal and malignant cells flourish and intermingle without apparent harm to either. There is thus no evidence that the immunity of such a rat is due to a humoral or general tissue reaction. The immunity does not appear to be due to any reflex by way of the somatic nerves. Attempts to obtain curative or immunising effects by inoculation of attenuated tumour cells failed, with the possible exception that fresh sarcoma cells coated with agar at 44° C. may have a protective influence.

4. Malignant cells were found to be more susceptible than any of the normal tissue cells to each of the antisera tested (except to anti-rat-kidney serum). The serum of many normal rabbits was found to be lethal to cancer cells, and only to a lesser degree injurious to normal mouse tissues.

5. Anti-J.R.S. serum kills M_{63} cells rapidly in vitro, and conversely anti-M_{63} serum from a rabbit kills J.R.S. cells.

6. Heterologous antisera made by injecting mouse or rat malignant cells into a rabbit or sheep contain antibodies which are anti-malignant but also others which are anti-mouse-rat group. These two varieties of antibodies act as adjuvants in causing the death of malignant cells in vitro.

7. The rapidly cytolytic antisera require complement in order to produce their effects. While addition of a little fresh serum reactivates certain sera more than one year old which had per se lost much of their potency, it does not restore their specific affinity for cancer cells. The anti-malignant-cell element in antisera appears to be almost as labile as complement. Anti-rat-mouse group antibodies, on the other hand, are very stable.

8. An antiserum made to rat kidney alone is more toxic in vitro to rat kidney than to any other tissue on which it was tested.

9. An antiserum made by inoculating human mammary cancer into a sheep kills M_{63} cells in vitro practically instantaneously. It is non-toxic to mouse heart or kidney, and has little, if any, deleterious effect on mouse salivary gland or skin. This serum damages J.R.S. cells but not normal rat tissues in vitro.

10. This anti-human cancer serum can be injected intravenously into mice in massive doses—e.g., one-fiftieth of the body-weight—without serious damage. At second and subsequent inoculations mice can tolerate twice this dose.

My grateful thanks are due to Prof. C. J. Martin, F.R.S., for allowing me the privilege of working at the Lister Institute and for his advice and encouragement. I am also much indebted to Miss A. C. Kohn-Speyer, B.A., a voluntary worker, for her skilful help. She has recently done most of the practical work involved in the tissue culture experiments. Specimens of human cancer have kindly been supplied to me by the Middlesex Hospital surgical staff through the good offices of Prof. S. Russ, by Sir Crisp English, K.C.B., Mr. G. H. Fagge, Mr. W. H. Ogilvie, and Mr. Max Page. Mr. Sampson Handley has kindly sent me specimens from private as well as hospital cases. Finally, I must express my gratitude to the British Empire Cancer Campaign, whose grant has made it possible for me to devote my whole time to cancer research. The Campaign has also most cordially assisted me in every other way in its power.

Note.—Since the above was written, the serum of a rabbit which had for another purpose been inoculated by a colleague repeatedly with the spermatozoa of a higher mammal, has been tested upon mouse cancer cells and normal tissues. The antiserum kills mouse cancer cells typically and rapidly, it is less deleterious to mouse kidney, and does not damage fibroblasts or heart muscle cells. This observation opens up a wide field for future investigation. It appears to indicate that cancer cells are specifically labile to antisera made against certain heterologous toti-potential cells. It is proposed to try whether an antiserum made against normal mycetozoal cells would act in the above way and also whether by inoculating a cancerous animal with some such primitive cellular antigen or with some heterologous cancer, it could be made to produce antibodies which would incidentally destroy the cancer cells growing in it.

MANCHESTER HOSPITAL SATURDAY FUND.—The local hospitals have benefited this year to the extent of £13,573 from the Manchester and Salford Saturday and Convalescent Homes Fund. Since its inauguration the fund has distributed £112,377.

PSYCHIC TRAUMAS

(MENTAL ACCIDENTS*).

BY ALBERT E. DAVIS, F.R.C.S. EDIN., L.R.C.P.,
HON. PHYSICIAN, LIVERPOOL PSYCHOTHERAPEUTIC CLINIC.

THE public, the medical profession, and many psychologists are apt to look upon every strange mode of thinking, such as phobias, obsessions, &c., as abnormal, and the word abnormal has come to be regarded as synonymous with diseased. We have been forced to take heredity and environment into our calculations, but have we up to the present taken chance or accidental causation into consideration sufficiently? I maintain we have not. We have gone far afield, and have dug very deeply, down to the infantile and the prenatal, in our psychological explorations, whilst in many cases overlooking the obvious. In dealing with physical ailments this attitude does not obtain; we are ready to consider either accidental or pathological causation, and this paper is a plea for the adoption of a similar attitude in psychical dysfunction.

Why should we assume that a woman found wandering in a strange town at 3 A.M. with total loss of memory is mentally afflicted? May it not be that, owing to the conduct of a drunken, blackguardly husband her conscious mind has been strained beyond endurance and has passed into a state of recuperative oblivion? I had such a case recently.

Are tired and exhausted brain cells to be looked upon as diseased? If so, let us be consistent and classify tired muscles as diseased. The pronounced difference in the reaction of muscles to fatigue from the reactions of mind and nerve may to a great extent account for our general attitude. Tired muscles refuse to work until they are rested, tired minds and nerves, on the contrary, become distressingly active and hypersensitive until absolute exhaustion ends in trance or oblivion.

The peevishness and irritability of a tired child finds its counterpart in the peevishness and irritability of the nervously exhausted adult—the neurasthenic. During the late war the long-continued strain of unaccustomed, disagreeable, and frequently intolerable conditions of life in the trenches, together with repeated mental shocks in soldiers of sensitive temperament, caused in some instances a complete cessation of mental activity. They were found wandering aimlessly around without memory, knowledge, or thought. Exhausted nature had blotted out consciousness to give it rest. This is the sleep of utter exhaustion, and is a temporary condition which ought not to be confused with actual degeneration of the brain due to disease. The causes are accidental, not pathological. It may be claimed that such cases occur only in persons of unstable, nervous constitutions. I contest this. It may occur in healthy, highly sensitive nervous organisations.

Again, I can conceive of circumstances which would break down the power of resistance of any human being. I do not claim that trauma is the only cause, but I do claim that it is a frequent cause, and ought to be borne in mind when we are searching for the causes of phobias, obsessions, and alterations in conduct and thinking. I take measures to exclude accidental mental stresses before I assume disease, and the percentage of cases which one can trace to accidental circumstances is astonishing.

The therapeutic value of this attitude is frequently very marked. The encouraging effect on the patient of learning that his symptoms have resulted from accidental circumstances and not from mental defect is in itself sufficient to warrant the psychotherapist adopting this as a routine method. Cases of somnambulism or ambulatory automatism are due, according to Prof. Pierre Janet, to a dissociation of personality. He attributes this dissociation or splitting of the personality to a lowering of nervous tension, with exhaustion of the higher functions of the brain and a consequent retraction of the field of consciousness. The lowering of the tension may have been due to mental stress or emotional shock. I am in agreement with Janet on this part of his theory, but I join issue with him when he regards every dissociation, whether spontaneous or not, as evidence of hysteria.

Criticism of Freud's Determinism.

Prof. Sigmund Freud says the determining factor of dissociated memories is mental conflict brought about by incompatible desires, such as a wish which is unbearable or distasteful to the rest of the personality. The desire is too painful or obnoxious to be entertained in consciousness, and it is persistently repressed and pushed out of consciousness, so becoming dissociated or split off from the personality. He claims that such wishes invariably can be traced back to early or infantile sexualism. Now the object of my paper is to draw attention to the importance of chance or accidental circumstances in the production of phobias, obsessions, dissociations, and perhaps minor forms of delusions.

By chance I mean only such accidental circumstances as have given rise to intense mental emotion or stress. Right on the threshold I find myself opposed by Freud. He allows little or nothing for chance. His theory is one of rigid determinism. He and I are in agreement that in the mental sphere there is no effect without a cause. But there we separate. I maintain that emotion originated by external factors of sufficient intensity can produce a splitting off of a part of the personality, a part which pursues its own course independently of awareness and of the will. A chance occurrence to him is simply a convenient point round which we get the conflict between infantile sexual desires and the conscious Ego or personality. In order to support his theory that our thoughts, our reactions to circumstances, have been so rigidly determined for us beforehand that we are never free agents, he has dug down to the level of primitive instincts, and held up the infantile sexual as the determining force for the whole of our lives.

I also propose to dig down into the primitive and see if I cannot disclose a yet stronger instinct round which the play of feeling will account for dissociation without the necessity of accepting Freud's determinism. Whilst differing from Freud's theory of ultimate causation, I have the greatest admiration for his original and practical methods of unearthing hidden mental processes.

He approached the psyche from the aspect of disease, hysteria, and found by association of ideas that his mental analyses frequently led him into the childhood of the patient. At this earlier period of his work he had a more open mind, and he searched for traumas in the childhood age. He found that in several of his cases gross sexual bodily outrages had been inflicted on them, and that in others the outrages had been the witnessing of scenes so improper, or environment so sexual, as to inflict a permanent injury upon the child's future mental and moral outlook.

I have had many similar cases. Freud, speaking of this period of his work, says of himself and his colleague, J. Breuer, "We reached the conception that the hysterical symptoms are permanent results of psychic traumas, and that the amount of affect (feeling) belonging to them was pushed away from conscious elaboration by special determinations, thus forcing an abnormal road into bodily innervation."[1] He starts off with the theory of psychic trauma, but then experiences a check, he finds that many of these tales of seduction or outrage were simply hysterical fancies, and later still he finds these fancies had a purpose—they were to conceal early sexual perversion in the patient himself. He made hasty and too far-reaching conclusions from a mere handful of very morbid material. "My 13 cases of hysteria were throughout of the graver kind, they were all of long duration, and some of them had undergone a lengthy and unsuccessful asylum treatment."[2]

* A paper read before the Liverpool Psychological Society.

Freud, still approaching the subject by the morbid route, with an unconscious bias urging him to make the exception into the rule, surrounded by an atmosphere of hysterical (or insane) deception and, limiting himself to the study of hysteria, found his progress barred by this complication.

The "Traumatic" Element.

He says: "The emphasis laid on the 'traumatic' element of the infantile sexual experience disappeared with this explanation, and it remained obvious that the infantile sexual activities (be they spontaneous or provoked) dictate the course of the later sexual life after maturity."[3] Personally, I fail to see anything obvious except his own obvious bias towards one single idea to cover the whole field of psychical disturbance. He will give up the traumatic theory, but holds on grimly to the sexual, and to support his theory digs deeply into the infantile and even into prenatal life.

But he is now faced by another difficulty. All infants are very much alike, and if some have, they all have, sexual wishes, so he builds up elaborate theories of a pleasure principle and a reality principle dating from or soon after the birth of the child, and going on in the unconscious and preconscious minds independently of consciousness. By the interactions of these principles the sexual tendencies of the infant may be sublimated, or refined later on into channels of useful and socially acceptable activities; this is the normal result. If these primitive wishes are not repressed they persist in adult life as sexual perversions. If they are repressed too much we get prudery and extreme bashfulness. If the strengths of the sexual wish and of the repression are about equal we get a nervous complaint. Freud maintains up to the present, "In a normal vita sexualis no neurosis is possible."[4] Some cases of neurosis undoubtedly have had an abnormal vita sexualis, but to make this theory universal is proof that the author is suffering from an unconscious sexual complex. He has become such a rigid determinist that he lays down the general law that nothing happening to a child after the age of 5 can cause a psychoneurosis in later life.[5]

If Freud had said, "In neurosis we may find an abnormal vita sexualis" I would have agreed with this, and there would have been no necessity for my bringing his theories into discussion. But when a scientist of his weight and position says, "In a normal vita sexualis no neurosis is possible," and he publicly discards the traumatic theory, it leaves me no other course than to challenge the correctness of his assertions if I am to obtain a hearing for my contention that accident plays a greater part in the production of neuroses than infantile sexual tendencies. In order to find an originating cause for neuroses Freud delved into the primitive and found one in the sexual instinct.

The Most Powerful Primitive Instinct.

I propose to delve down there to ascertain if there is not another instinct there, complementary to Freud's, as a cause of neurosis, and I find the instinct of self-preservation to be of greater moment and of greater intensity than that of reproduction. Without it the great part of animal life would become extinct. The "sine qua non" of the instinct of self-preservation is the instinct of fear.

If there were no fear—if man had no fear of the tiger, the rabbit no fear of the dog, the sparrow no fear of the cat, the animal world in time would consist solely of the carnivora, and the carnivora would walk into the sea and get drowned. Fear is a biological necessity which Freud appears to have overlooked.

How does an animal react to danger, or fear? In one of three ways—flight, fight, or fright. All of these reactions are mainly in the instinctive and emotional level. It may be through conscious perception that fear is roused, but once aroused, conscious thought and reason take a secondary place in the reactions.

The sympathetic nervous system, which is intimately associated with emotion, assumes control. In the case of flight, through the action of the sympathetic, the animal's limbs are flushed with blood, and the whole of its potential energy is focused and directed to speed. The hunted hare has only one motive—to run as it never in its life ran before. I think it must be admitted that nervous fear of company may cause blushing in a young girl without inferring sexual wishes and repressions in her infantile and unconscious life. If flight is checked or is impossible the animal may seek safety in fight; a cornered rat will turn and fight man or cat. A man, if he cannot escape by flight, may turn and fight with the fury of a Berserker. In the remaining reaction, fright, the object is to escape by concealment. The rabbit crouches down trusting the dogs will overlook him: theirs is an actual paralysis of motion and of will. We find everyday expressions indicating a similar condition in humans: "He was paralysed by fear," "struck dumb by terror," "fear rooted him to the spot," &c.

Fear the Most Frequent Cause of Neurosis.

I here make an emphatic declaration: The instinct of fear is the most frequent cause of neurosis, and the sexual instinct is a much less frequent cause.

Now let us return to the case I referred to earlier. This poor woman was subjected to repeated emotional stresses due to a drunken husband, continually on the alert for danger, strained beyond endurance, when a merciful provision of Nature blotted out her pain by unconsciousness, and the primary law of self-preservation drove her onwards in blind, instinctive flight. I decline to admit Janet's theory of hysteria or Freud's theory of infantile sexualism in this case. When we contemplate the terrible strain of life in the trenches during the late war, it is marvellous that so few men broke down and, obeying the law of Nature, found refuge in unconscious and instinctive flight.

Some psychologists would have us assume that the determinants of action are to be found in the subconscious, or in the unconscious. If so, what part does conscious reason play? Man without reasoned control is a child, or is insane. The prime function of reason is to restrict feeling, imagination, desire, conduct, within moderate limits. Reason can be partially or temporarily displaced by an overwhelming wave of emotion due to external factors, and if these are of sufficient intensity no inherent nor abnormal tendencies are necessary.

I endeavour to approach my cases from the standpoint of the normal, and in any departure from this I endeavour to keep an open mind as to causation—hereditary, constitutional, acquired disease, environmental, hysteria, sexual or traumatic. A good physician makes the diagnosis fit the patient, and not the patient fit the diagnosis.

Illustrative Cases.

The following cases will, I think, bear out the views I have expressed:—

CASE 1.—A lady consulted me suffering from claustrophobia (dread of enclosed places) as one of her chief symptoms. The cause of claustrophobia is most frequently the dread of being taken suddenly ill and not being able to quickly get out of the train, church, or crowd, as the case may be. This second dread is frequently due to a third phobia, the fear of heart disease, and this is the phobia that has to be traced and treated. I put this before the patient, and to my surprise she denied any fear of heart trouble; she was afraid of actual vomiting. At 6 years of age she had been terrified by seeing a lady vomiting in church, she had nightmares of this, and refused to go again to church until forced to do so. The impression partly wore away, but never quite disappeared. At 10 years of age she was crushed in a circus crowd; this aroused a fear of suffocation and death. At 12 years of age she found herself in a crowd in a railway station; she experienced the same sensations and afterwards was unable to travel in a train or cab unless accompanied by a companion, and even then she suffered great mental distress. The symptoms were disproportionate to the alleged cause, and her mother supplied the missing clue. At 2 years of age she was suffocating with (?) whooping-cough, when her mother rushed to her and putting her finger down the child's throat pulled out a piece of flesh. Evidently this must have been diphtheritic membrane. The patient could then recall her feelings at the time, and they were similar to her later ones.

The relief of mind by bringing the repressed memories up into consciousness and quietly discussing them was immediate and marked. The same day she sent her husband on to a café to wait there for her whilst she made a call, the first time in her married life of 12 years that she had offered to walk alone in the street. Within a few days she was travelling long distances alone in a taxi-cab.

On her next interview she asked me if a certain widely-advertised remedy would cause heart disease if taken in excess, and confessed for the first time that prior to her marriage she had drunk a bottle of this preparation in one day, and hearing a day or two afterwards that a man had died from heart failure due to an overdose of this remedy, she had ever since had a secret fear of her heart being diseased. This is interesting in view of her previous denial. She had suppressed it from her people, had denied it to me, and had tried to repress it from her own consciousness, probably from a feeling of shame—a clear example of a mental conflict which was not sexual. I showed her an analysis of this preparation—it was simply citric acid. She was cured of all her phobias and has remained so.

Freudians would claim such a case as a psychoneurosis due to sexual wishes being repressed in infantile life. I am convinced she had a normal vita sexualis.

CASE 2.—A young man consulted me for a rather unusual phobia. His work necessitated him visiting in his neighbourhood and he was seriously hampered by an unreasoned terror of a certain 300 or 400 yards of the main road. He indicated the exact spots where the panic started and where it ceased, and in order to avoid this he made wide detours. In addition he had agoraphobia (dread of open spaces). This part of the road had no painful associations. Did it differ materially from the rest of the road? Yes, it had walls and hedges on both sides and no shops nor houses. This gave the clue. He could not pass down any street with blank walls on both sides; he was in terror of being alone and of falling or collapsing with no one looking out of windows or doors to see him fall.

He gave the history of a discharging ear from 14 years of age. From 15 to 18 he could not walk steadily; he had to have people on both sides of him. Evidently he had had middle-ear disease affecting the organs of balance, the semicircular canals. At 30 years of age he was frequently falling; a right mastoid operation was then performed with success, restoring his perfect balance.

The originating phobia had been a natural protective instinct to keep him out of danger. It had persisted in the subconscious in the form of a habit for four years after its necessity had ceased. By exercises and tests I satisfied him that he was definitely cured of his former instability and giddiness, and in a short time he freed himself from his phobias.

Freudians say of a phobia: "It symbolises certain unconscious wishes—ultimately wishes derived from the period of infantile sexuality—and makes manifest the fear with which such wishes would be regarded by the moral self of the patient if they became conscious." [6] The cause in this case is so obvious that I do not propose even to discuss an infantile sexual origin. I have known such persistence of fear follow injuries to joints and such cases may account for some of the successes of bone-setters.

CASE 3.—An interesting case was that of an old man who had a most distressing phobia of the slightest draught or current of air. If he passed an open shed on the dock road and felt the least wind he became ill and was compelled to go home to bed. If anyone passed him in a room it caused him to have hot flushes and "creepy tinglings" down his legs. He had suffered from this for 17 months, his people had lost patience with him, and he came to ask me if he was becoming insane.

I obtained the following history: One night, on arriving home, his people were out; he made himself a meal and then fell asleep in front of the fire. Influenza was raging at the time and he was afraid of it. He was awakened by a shivering fit and thought he had caught it. During the following week he had three more shivering fits in the night time, and from then suffered from the phobia described. A little further inquiry elicited the cause of the first rigor, a cause he had never taken into account. It was a cold night and the fire had gone out! We must not look upon this as foolish; that would be a hasty and superficial attitude. The old man was not fully awake when panic seized him, and panic displaces reason.

I did not spend months or years unearthing or imagining an infantile sexual conflict in this case—as a matter of fact I never mentioned sex to him. I treated him by quiet discussion on 11 occasions, with light hypnosis to calm his nervous system, and he made a complete recovery. On his later visits he vigorously fanned himself with a newspaper to reaccustom himself to draughts.

CASE 4.—A lady was sent to me from an eye and ear infirmary as suffering from functional giddiness. No organic disease was discoverable. The fear of falling was so persistent she was afraid to go out alone. She improved under suggestion, but rather slowly, so I resorted to mental analysis. Using Jung's word association tests I found an intense fear of water. Water such as a park lake fascinated her, although she was horribly afraid of it. She had no suicidal tendencies. She strenuously denied being worried over some near friend or relative having to go to sea. The reactions indicating this were very marked, and on my insisting she ultimately admitted that her husband frequently had to cross to Ireland, and on these occasions she sat up all night and could not sleep. Her previous denial was an attempt to suppress an unbearable thought from her field of consciousness and to avoid discussing it with me.

I obtained the following history from her, which she had apparently forgotten, and which she had never told her husband nor friends. Suppression again, due probably to the painful nature of the memories. At 10 years of age she was sent to live with her grandmother. She was very unhappy there, so much so she told her parents she would drown herself in the well if they did not take her away. She distinctly remembers really meaning to do so.

At 17 years of age she was sitting on a camp stool on the beach at a seaside resort. A passenger steamer, instead of slacking speed, came in at full speed and collided with the pier. A huge wave from the backwash of the steamer surged up the beach. The other people at the edge of the water ran for safety, but she was paralysed with fright, and the wave washed her out into deep water. She was only rescued from drowning at the last moment.

The unearthing of these painful suppressed memories was immediately followed by a disappearance of all her symptoms. I never broached the sexual question.

CASE 5.—An engineer's labourer consulted me for rigidity of his spine. He was unable to bend forwards and could not climb stairs owing to "tightness" of his legs. He suffered very little pain. On examination there was no marked tenderness of the spine, rotation was normal, flexion very much restricted. Knee-jerks increased, no incoördination. Evidently a case of hysterical spine.

The history was as follows: Eight years previously an iron plate weighing 14 tons was swinging from a crane when the chain broke and the plate falling on his right arm crushed it, disabling him for six months. At the end of that period he returned to light work, and for 7½ years he had been on light work through inability to bend his spine. He was not malingering; there was no question of lawsuits or compensation in the matter. He had been a saving man. He had travelled a good distance, stayed in Liverpool eight weeks, and paid my fees out of his own pocket in his anxiety to be cured.

His back had not been injured and he was not shamming; what, then, was the most likely cause of his disablement? Elsewhere [7] I have quoted several similar cases in which the cause proved to be suppressed fear. It was the same with this patient; the cause was fear kept up by the instinct of self-preservation. Some part of his mind outside the region of conscious awareness had formulated the idea that if he could not bend his back he would not again be exposed to such a danger. It was a purely instinctive protective reaction. Some confirmatory evidence of this is that bending was alone affected; rotation of his spine and twisting of his body was normal. Rigidity of the spine was merely a symptom, and to treat the symptom only, by suggestion or any other method, would have been useless, as the originating fear would have found expression in some other symptom.

The radical cure was to explain the cause to the patient, to point out the intensity of the fear, and the advisability of removing the fear by ceasing to work under such risks in a shipbuilding yard. He saw the logic of this advice and said he would take a proffered partnership in a motor business. The result was most satisfactory; in a few weeks he could lace his boots, bend, and lift weights quite normally, and was fit for full work under less risky conditions.

Freudians would call this a psychoneurosis, a conversion hysteria. Mitchell says—

"We have seen how, as a result of deprivation and regression of the libido earlier erotic activities of childhood are revived, by way of unconscious phantasies, and come into conflict with the ego tendencies of the patient. As a result of this conflict a compromise is effected and the repressing forces, as well as the unconscious wish pertaining

to the phantasy, achieve some sort of satisfaction in the hysterical symptom which emerges. . . . The symptom is not, indeed, recognised by the patient as any form of satisfaction, but rather as suffering, and it is through the latter quality that the repressing forces are gratified—the symptom is an expression of the disapproval with which the personality meets the re-awakened infantile wishes." [8]

My object is not to criticise Freud's theories except where they clash with mine. I leave the reader to judge which of the two theories comes nearer to the truth in this case.

Summary.

In conclusion, as against Freud's dogmatic determinism, I advance my theories as to the causation of the great majority of neuroses. 1. The unbearable idea or wish arises in consciousness, and not in the unconscious nor in the infantile sexual. 2. The unbearable idea is not repressed into the unconscious by an intra-psychic censor. It is deliberately suppressed by conscious effort into the subconscious—into present unawareness—not deeper. 3. When the complex is laid bare it is evident that the patient must have been aware of it at some period, if not throughout. 4. The causes are therefore to be sought for in adult life, or in youth, rarely in childhood, and only exceptionally, if ever, in infantile sexuality. 5. The majority of neuroses are founded on moral or physical fear. 6. The fear may be an instinctive protective reaction. 7. The fears are frequently due to external causes (chance) and may be described as psychic traumas or mental accidents.

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TORSION OF THE GALL-BLADDER.

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TORSION of the gall-bladder is a rare condition. Irwin [1] in recording a case in the *British Journal of Surgery* in 1921 stated that, as far as he could trace, his was the eighth recorded example. In 1922 in the same journal Lett [2] drew attention to a case which he had recorded in THE LANCET in 1909 [3] and which had been overlooked. Since Irwin's case others have been recorded by Frankau,[4] Jonas,[5] and Fifield.[6] The following would appear to be the thirteenth case. The fact that five have been recorded in comparatively recent years suggests that the rarity of the condition has been exaggerated.

There are two important factors which predispose to torsion of the gall-bladder.

1. *The Presence of a Mesentery.*—This of itself is sufficient to permit of torsion of the gall-bladder, as in the case recorded by Frankau, in which the torsion had occurred on a mesentery which had a narrow gall-bladder attachment.

2. *The Length of the Cystic Duct.*—According to Brewer [7] the cystic duct varies in length from ½ to 2½ inches, and Walton [8] states that it is normally about 1½ inches long. If there is a long cystic duct together with a mesentery the gall-bladder may hang almost free from the liver edge. Such a combination of factors increases the liability to torsion. In the example recorded by Wendel [9] the duct was 3¼ inches in length.

Report of Case.

A woman, aged 71, was admitted on Dec. 30th, 1925, with an illness of 50 hours' duration. The onset was sudden. While sitting down she felt very ill and faint; this was followed one hour later by the onset of pain, which commenced in the epigastrium and radiated to the right abdomen, where it settled. It was severe in character and "went through to the back." There had been no vomiting. The bowels were open and there were no urinary symptoms.

No history was elicited of any previous attacks of the same kind, but for 17 years she had suffered from "bilious attacks" which came on at monthly intervals and consisted of pain, beginning an hour after food, rising into the chest, and relieved by vomiting. There was also a history of flatulence.

On examination the temperature was 98° F. and the pulse-rate 108. There was marked tenderness and rigidity of the right abdomen at the umbilical level. A few days later a definite rounded lump was palpable at this same site, the swelling being dull on percussion and not appearing to move on respiration.

With the history of epigastric pain radiating to the right abdomen and the presence of a swelling, a diagnosis of appendix abscess was made and, since the "abscess" was not resolving, operation was decided upon, although the patient was old and her general condition poor.

Operation was performed under general anæsthesia. The abdomen was opened through a vertical incision and the rectus muscle was not retracted. There was a well-shut-off lymph-covered cavity containing a rounded swelling which proved to be a gall-bladder that had made one turn on its neck in an anti-clockwise direction. The gall-bladder was removed with great ease as there was a narrow mesentery in the region of the neck and the gall-bladder was hanging from the liver edge. As there was no raw area on the liver the abdomen was closed without drainage. On examination the gall-bladder was congested but there were no stones. The wound healed soundly.

The case illustrates the main features of this rare condition—viz.: (1) The failure of pre-operative diagnosis. (2) The sex—all females. (3) The condition arises particularly in people of advanced years, the two exceptions being those patients, aged 23 and 34 respectively, seen by Wendel and Irwin. (4) The sudden onset. (5) There is always a history of right-sided pain. This may be associated with epigastric or general abdominal pain, as in the above case and those of Irwin, Frankau, and Jonas. Occasionally the pain may radiate to the back. (6) A swelling, either rounded or sausage-shaped, is usually present, but in the early stages it may be masked by rigidity, as in my case, or it may be hidden by the liver. Frankau's case affords such an example. Whether it is mobile or not depends upon the extent of the adhesions. A very interesting example is afforded by Wendel's case in whom in November, 1895, a cystic swelling was discovered which varied in position, and which in October, 1896, was found to be fixed. (7) The operation is usually an easy one on account of the mobility of the gall-bladder and the length of the cystic duct, and so the prognosis is good except in so far as the patients are elderly. (8) There may be a previous history of "bilious attacks." (9) Associated abnormalities may be present. Wendel recorded a floating kidney, and in my case there were cysts in the liver. An atypical feature of my case is the absence of vomiting, which is usually frequent or even incessant.

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See also Moynihan, Sir B. G. A., and Upcott: Medical Journal, Bristol, 1913, p. 127.

ST. BARTHOLOMEW'S HOSPITAL WAR MEMORIAL.—On July 8th the Prince of Wales unveiled the memorial to students of St. Bartholomew's Hospital who fell during the war. It takes the form of a new arched court leading from the Henry VIII. gateway to the hospital square. There are four panels bearing the names of 113 students, and around the court runs the inscription, "These gave their lives for King and Country, counting not the cost in defence of right." The Army, Navy, and Air Force Medical Services were represented at the ceremony by their directors and the City of London by the Lord Mayor and Sheriffs. A short service was conducted by the Chaplain-General to the Forces, Dr. A. C. E. Jarvis, and a volume containing the names recorded in the memorial was presented to the Prince by Sir Anthony Bowlby.

Clinical and Laboratory Notes.

SOME CASES OF LONG-STANDING DRUG ADDICTION.

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PHYSICIANS specialising in the treatment of drug cases felt considerable apprehension after the passing of the Dangerous Drugs Act, when elderly drug addicts of many years' standing began to seek their advise and present themselves for treatment. Many of these patients were pathetic objects and when, eventually, their treatment was undertaken, it was always with the expectation of an anxious time.

On one occasion a patient, aged 71, with an addiction of 30 gr. of morphine daily for 40 years, presented himself for treatment. He had put his affairs in order, had made his will, firmly expected to die under treatment and "leave his bones amongst us," as he expressed it, whereas, in reality, he left here after a few months to get married! This is a specimen case, but consideration of a series of these cases demonstrates that these chronic subjects can be cured with less trouble and suffering than patients of half their age and with only a few years of addiction. The cases also prove—a fact not always recognised—that a man can carry on his life's work and at the same time take considerable doses of morphine. What is more remarkable still, they prove that a man may hide his failing from his nearest relations and friends—even his wife.

The three examples which follow are typical of the elderly cases which the Dangerous Drugs Act has caused to come for treatment.

CASE 1.—This was a professional man, 65 years of age. In his younger days he had achieved some degree of success, and all his life he had been a keen sportsman, fond of shooting, fishing, and hunting. He had first taken morphine 35 years before to relieve the pain of a hunting injury, and except for a few periods after treatment he had continued the habit, taking from 5 to 20 gr. at various periods. On admission he was taking from 8 to 10 gr. daily. He had also taken alcohol to excess, off and on, all his life. When this patient arrived for treatment he had been without his drug for 20 hours and was in a state of collapse. He was put on a graduated dose of morphine and soon recovered from the collapse. He then underwent the usual course of treatment. His appetite was poor, and he felt the characteristic withdrawal weakness considerably, but he only stayed in bed two whole days at the time of complete withdrawal. He had chronic bronchitis and this and the cough and expectoration bothered him at night.

He soon began to recover and within a fortnight of withdrawal he went with his male nurse eight miles by car and fished in the River Dart for several hours. When he left he was active and cheerful and looked quite ten years younger than on admission.

CASE 2.—A retired clergyman, aged 74 years, who had been taking morphine continuously for over 40 years. It had been given to him first for neuritis in his feet, and he had continued to take it without any intermission. He had carried on his work as a clergyman all this time and had been rector of his parish for many years. Neither his wife nor anyone else had had the slightest suspicion of his habit. His average daily dose appeared to be about 7 gr. The patient was practically an abstainer and the question of alcohol did not enter into the case. This patient preferred to stay in his room, generally in bed, during the withdrawal period, and he complained very little of anything and showed no marked symptoms until at the point of complete withdrawal he complained of pains in his feet, and he said they were the same kind of pains as those for which he had been given morphine 40 years previously. Various remedies were tried, and after about a week the pains subsided and did not return. This patient suffered a good deal from nasal catarrh, but otherwise was remarkably well. He gradually regained strength and at the end of 12 weeks was driving his car.

CASE 3.—This was a professional man, 71 years of age, and still carrying on his profession, who had taken morphine for 40 years. He first took it to try its effects, after observing the comfort it gave to one of his patients. He had taken it without any break for over 40 years. His average daily dose was 30 gr., taken in two doses of about 15 gr. each, morning and evening. In addition to this, since the death of his wife some years ago, he had taken a bottle of whisky daily. In this case also neither his wife nor his friends suspected the habit. On admission he was in fairly good health, but his blood pressure was 220, and his pulse at times intermittent. He also had a large umbilical hernia caused by straining due to constipation. As is my practice in cases of double addiction the alcohol was first of all reduced and gradually discontinued and then the morphine was also gradually reduced to 2 gr. daily without any unpleasant symptoms. Then one morning, about 1 A.M., he had a heart attack and his pulse became very irregular and fluttering, and he was very nervous and frightened. But after an injection of morphine his heart calmed down and he was asleep in 20 minutes and had no return of the cardiac irregularity during his stay. At the actual withdrawal stage he felt disinclined for exertion and stayed in bed for three days, but he had no withdrawal symptoms except the feeling of weakness and some burning sensations in his intestines. Five days after withdrawal he was told he had not had any morphine for five days, and from then onwards he progressed steadily and showed much mental exaltation and lightness of spirits. He delighted in his "freedom from bondage," as he expressed it, and was most grateful to everyone concerned. He left here after a 12-weeks' stay and he looked and said he felt 15 years younger than when he came. His blood pressure had fallen to 180 and his heart gave him no trouble. He has since written me that he has continued to get stronger and the last news of him was that he had married again.

Compared with younger patients, these old men did remarkably well, and their suffering was slight.

There is another aspect of this question which may not have received sufficient consideration from the authorities, if it has had any at all, and that is the effect of treatment on these old patients' moral and emotional natures. After a man has lived in an artificial world of his own making for 30 or 40 years, with all his senses dulled, there are bound to be unexpected and even undesirable manifestations when, at last, he emerges from his tomb and his whole nervous system is alert and hypersensitive to every impression and stimulus. The conduct of all three of these patients was such as to give grounds for anxiety, for they might easily be involved in legal proceedings.

OBSERVATIONS ON A CASE OF ACHOLURIC ICTERUS.

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AND
T. F. HEWER.
(*From the Pathological Department, General Hospital, Bristol.*)

Prof. Barcroft's address on the functions of the spleen, published in a recent number of THE LANCET, prompts us to submit the following account of a case of acholuric icterus in which the blood of the splenic vein was examined immediately after splenectomy.

The patient, a man of 29, was known to have an enlarged spleen at the age of 12. When seen at the age of 26 the spleen reached to the level of the umbilicus; he was jaundiced, but bile pigment was absent from the urine. The blood showed a leucocytosis of 18,800, accounted for by an absolute increase in lymphocytes. There was an excess of urobilin in the urine and of bilirubin in the blood plasma. Since then he has been troubled with epigastric pain and considerable drowsiness and states that his jaundice, though liable to considerable fluctuation in intensity, is increasing slightly. No family history of jaundice or splenomegaly was obtained. An examination made a few days before splenectomy showed:—Blood: Red cells, 4,352,000 per c.mm. Hæmoglobin, 75 per cent.; C.I., 0·86. White cells, 19,700; increase due to lymphocytosis. Moderate micro-anisocytosis and slight polychromatophilia of red cells. Blood fragility: Maximum resistance, 0·6 per cent.; minimum resistance, 0·44 per cent. Van den Bergh reaction: Positive, indirect, ½ unit. Blood spectrum normal. No serum auto-agglutinins found. Lævulose tolerance test normal. Urine moderate excess of urobilin, no unaltered bile pigment. After splenectomy, the blood aspirated from the splenic vein showed: maximum resistance, 0·75 per cent.; minimum resistance, 0·48 per cent. Van den Bergh reaction: positive, indirect, 2 units.

The spleen weighed 1 lb. 7 oz., was 7¾ in. in length, and histologically showed the usual reticulo-endothelial proliferation, engorged sinuses, and red cell phagocytosis.

Orahovats has demonstrated that, in a normal animal, the red cells of the blood in the spleen pulp are more vulnerable to the lytic action of hypotonic saline and less vulnerable to that of saponin than are the red cells in the general circulation. This result was obtained in the blood leaving by the vein after ligature of the splenic artery and stimulation of the splenic nerve. By this manœuvre red cells were obtained direct from the spleen pulp, cells merely passing through the organ and escaping, its "filter-bed" being eliminated. Prof. Barcroft inclines to the view that this increased fragility is not acquired during the sojourn of the cells in the spleen pulp, but that cells which are fragile from some unknown physiological cause are retained by the spleen acting as a differential filter.

In the case we report, the cells of the blood aspirated from the splenic vein were more fragile than the abnormally fragile cells of the general circulation. It is not unlikely that the blood we obtained came from the spleen pulp, for ligature of the pedicle would probably be sufficient stimulus to the splenic nerve, and the delay between ligature and removal would allow sufficient time, for the splenic sinuses to deplete themselves. It is obvious that such a result as we obtained in a diseased organ might very easily have been misconstrued if the fundamental physiological facts regarding normal fragility had not been available.

ACUTE INTUSSUSCEPTION IN AN ADULT.

BY F. W. WIDGERY, F.R.C.S. ENG.,
SENIOR RESIDENT MEDICAL OFFICER, BRISTOL GENERAL HOSPITAL.

THE case below is thought worthy of record because of the unusual occurrence of the acute condition in the adult. Furthermore, it illustrates the extraordinary power possessed by some individuals of recovery from the moribund state.

Mrs. D., aged 43, was admitted to the Bristol General Hospital at 10.30 P.M. on March 13th, 1926, with a history of four days' severe and continuous abdominal pain and vomiting, of sudden onset. Her previous history was of no account.

The condition on admission was as follows. Her expression was anxious; she vomited small quantities of brown fluid frequently and was in great pain. The tongue was dry and furred. The abdomen was flat, the pain being most severe in the region of the umbilicus. There was no rigidity. Palpation, however, revealed forcible contraction of the intestine, accompanied by borborygmi, although no visible peristalsis was present. Temperature, pulse, and respiration normal.

I made a diagnosis of acute small intestine obstruction of unknown origin. I opened the abdomen about one hour after admission. Some coils of rather distended small intestine first appeared. A movable lump was felt about 2 inches below the umbilicus. When drawn into the wound it proved to be an ileo-ileal intussusception. The mass was easily reduced, but a considerable length of gut was obviously gangrenous owing to thrombosis of the mesenteric vessels. It was found necessary to resect 5 feet of the ileum and to do an end-to-end anastomosis.

For 48 hours after the operation the patient's condition was desperate, the pulse being quite uncountable and only just perceptible. Two intravenous saline injections of 2 pints each were given. Eserin and turpentine enemata were begun immediately and continued four-hourly. The colour of the vomiting changed from brown to biliary, the bowels began to act, and the patient's condition gradually improved.

Convalescence was complicated by a troublesome *Bacillus coli* infection of the wound together with thrombosis of the left internal saphenous vein. She was discharged on April 24th. The bowels were then acting regularly and have done so up to June 28th. The wound is now healed and the swelling of the leg has subsided. The interior of the apex of the intussusception showed a gangrenous, adenomatous polyp, about the size of a cherry.

I am indebted to Mr. J. Lacy Firth, into whose ward the patient was admitted, for permission to publish this case.

Medical Societies.

PATHOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND.

A MEETING of this Society was held in Marischal College, Aberdeen, on July 9th and 10th, Prof. T. SHENNAN and J. CRUICKSHANK in the chair.

T. DALLING (London) said that lamb dysentery could be produced by feeding lambs with cultures of *coli* from infected animals plus cultures of *Cl. Welchii* or with larger doses of *welchii* alone. In large scale field experiments, mostly in the border counties, very satisfactory protection was obtained (*a*) by immunising the pregnant ewes with *coli* vaccine along with *welchii* toxin-antitoxin mixtures, or (*b*) by dosing new-born lambs with *coli* and *welchii* antisera.—J. W. MCLEOD (Leeds) described an anaerobic bacillus similar to Pfeiffer's organism obtained from blood and cerebro-spinal fluid which produced amounts of hydrogen peroxide demonstrable by the usual cadmium-iodide starch and titanium reagents.—C. H. BROWNING, J. B. COHEN, S. ELLINGWORTH, and R. GUBRANSEN (Glasgow and Leeds) gave an account of the trypanocidal activity of a new series of aminostyryl and aminoanil quinoline compounds. Though unsuitable for intravenous injection they gave remarkable curative results with *T. brucei* in the acute disease in mice and the chronic infection in rabbits. They have much less effect in vitro.—A. E. BOYCOTT and C. PRICE-JONES (London) found that Gaertner's bacillus fed to rats in adequate doses penetrated to the spleen in all cases in two or three days and was then slowly got rid of, only about 15 per cent. of animals remaining infected after two months. The majority of animals develop agglutinins. *B. pyocyaneus* and *B. typhosus* fail to get a lodgment in the spleen when fed in the same way.—J. A. ARKWRIGHT (London) showed that vaccines made from the smooth form of paratyphoid A were more efficient than those prepared from the rough variety.—J. C. KERRIN and J. CRUICKSHANK (Aberdeen) described four small epidemics of dysentery in Aberdeen, mostly in children, due to Sonne's dysentery bacillus which appears to be identical with *B. coli anaerogenes*.—C. H. WHITTLE (Cambridge) had found the inulin fermentation of pneumococci an unreliable character.—J. GORDON (Leeds) improves media for the growth of the gonococcus by the addition of taurine.—P. HARTLEY (London) noted that when nearly neutral mixtures of diphtheria toxin and antitoxin are made in the manner of Ramon the precipitates produced are very small in bulk, contain about 0·5 per cent. of the original nitrogen, and are mostly composed of magnesium hydrogen phosphate; the actual antigen cannot constitute more than 10 per cent. of the whole precipitate and must be present in a high state of purity. Its antigenic value is preserved if it is diluted for injection with saline, but considerably deteriorated if broth meat extracts or carbolic are used.—R. A. O'BRIEN (London) pointed out that the minute amount of toxin in a Schick test injection can act as an immunising antigen in animals and children.—J. MCINTOSH and S. L. BAKER (London) had obtained very variable results in experiments on the filterability of the Rous tumour. Passage seemed to raise the infectivity considerably but differences in the physical condition of the tumour and in the viscosity of the extracts made differences which could not be controlled. Digesting with acid trypsin gave a more active filtrate.—A LEITCH (London) had also had much difficulty in transferring "mouse sarcoma 37" by cell-free filtrates. Drying killed the tumour.—T. J. MACKIE and E. N. MCDERMOTT (Edinburgh) described the spirillum they had obtained from a case of rat-bite fever; in the rat the organism passes in the tears to the nose and mouth and is so inoculated by the teeth.—J. O. W. BARRATT (London), from an analysis of the mode of action of hirudin, concluded that it acted on thrombin.

—F. EARLAM and E. E. GLYNN (Liverpool) pointed out that the maximum incidence of post-operative pulmonary thrombosis was about the tenth day and they had found that the blood platelets begin to increase directly after an operation and reach their maximum at the same time; the coagulation time is diminished proportionately to the increase in platelets. —K. EDGECOMBE and E. E. GLYNN (Liverpool) said that in blood transfusion the effect of the recipient's serum on the donor's cells was not the only test of importance; some donors might have such a high agglutinating titre that their serum, even when diluted in the blood of the recipient, might agglutinate his cells. The only safe procedure was to cross-agglutinate the cells and serum of the recipient and the proposed donor.—J. MARNOCH and T. SHENNAN (Aberdeen) discussed thrombo-angeitis obliterans.—A. LYALL (Aberdeen) dealt with the protein ratio in relation to the acidosis of diabetes.—J. S. DUNN and C. J. POLSON (Manchester) in experiments on uric acid nephritis found that very large doses of urate intravenously were excreted in the kidneys, passed down the tubules, and then by concentration and acidification was precipitated in the ascending limb of Henle's loop where they caused necrosis of the epithelium. The urea retention observed is due to urea leaking back from the glomerular filtrate through the damaged epithelium. No chronic results were obtained by the repeated exhibition of smaller doses. —G. S. WILLIAMSON and I. H. PEARSE (London) urged that the "intercellular channels" between the epithelial cells of the thyroid alveoli were cells joining their microcapillary system to the general reticulo-endothelial apparatus of the organ.—G. LENTHAL CHEATLE (London) demonstrated the various forms and modes of origin of the extra- and intra-elastica fibro-adenomata of the breast. He also showed how acquired adhesions in bursæ arose by the organisation of strands of lymph.—A. W. DOWNIE and J. CRUICKSHANK (Aberdeen) had planted stones, lead shot, gall-stones, glass beats, &c., in the gall-bladders of guinea-pigs and had failed to convince themselves that the epithelial growth which was obtained in some instances was malignant in nature. —D. LEITCH exhibited some of his own specimens and reaffirmed his conviction that they demonstrated cancer.—J. MARNOCH (Aberdeen) showed a leiomyoma of the stomach from a man of 57 with a five years' history of intermittent vomiting and hæmorrhage from an ulcer on the mucosal surface.—E. F. FINCH and H. H. GLEAVE (Sheffield) described a case of osteoclastoma (myeloid sarcoma) of the femur with a known history of eight years; after the leg was finally amputated recurrence occurred in the stump and the patient died with pulmonary metastases of the typical histological structure.—M. J. STEWART (Leeds), from an analysis of stomach material removed at operation in some 300 patients, concluded that about 9 per cent. of chronic gastric ulcers show cancer and that about 19 per cent. of cancers show old ulceration. The most important criterion of chronic ulceration is destruction of the muscular coat. Misplaced epithelium and heterotopias have misled many observers into unjustified diagnoses of cancer.—J. S. YOUNG and S. V. TELFER (Glasgow) described a case of renal calculus with epithelioma infiltrating into the kidney. —T. SHENNAN (Aberdeen) discussed a series of tumours of lung and mediastinum and laid stress on the difficulty of distinguishing between the sarcomata and carcinomata.—S. MCDONALD (Newcastle) showed how it was possible to make a histological diagnosis of pneumonia in a body exhumed many weeks after burial.—N. D. BALL (London) showed an epithelial tumour growing on the spleen of a rabbit which looked like appendix tissue.—J. P. MCGOWAN (Aberdeen) various conditions of comparative blood pathology; H. J. PARISH (London) coccal forms of the diphtheria bacillus; S. C. DYKE (Wolverhampton) a bony tumour of the breast; D. F. CAPPELL (Glasgow) a dissecting aneurysm of the aorta, a retroperitoneal ganglionic neuroma, and partial necrosis of liver with tumour formation; J. M. BEATTIE (Liverpool) specimens of experimental foot-and-mouth disease; E. E. GLYNN (Liverpool) a case of ? sprue and some exceptionally large biliary tuberculous abscesses; T. SHENNAN (Aberdeen) various pathological specimens and some useful post-mortem instruments, methods of storing slides, dehydrating alcohol, &c.; and C. H. USHER (Glasgow) some eye preparations.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ANÆSTHETICS.

THE first of two morning sessions of this section, which have been arranged as a welcome to visitors from the United States and Canada, was held on July 13th. Dr. F. E. SHIPWAY, President of the Section, took the chair.

The PRESIDENT, in welcoming the Transatlantic visitors, alluded to the various discoveries made in the domain of anæsthetics by workers in the States.

The Physiology of Respiration in Relation to Anæsthesia.

Prof. J. S. HALDANE read a paper on Some Bearings of the Physiology of Respiration on the Administration of Anæsthetics. The anæsthetic administered, he said, acted on the whole central nervous system, and modified the mechanism of various physiological processes; unless these effects were controlled they might be harmful, even dangerous. When the anæsthetic was pushed, the lips were apt to lose their bright red colour and to become bluish, though there was no cessation, nor even marked diminution, of breathing. This change of colour indicated that the blood was not being fully oxygenated in the lungs. Another symptom of defective oxygenation was Cheyne-Stokes breathing. Anomalous effects could be explained by assuming that the oxygen percentages in the different alveoli varied considerably, as alveoli with oxygen content considerably lower than normal might be unable to saturate the blood beyond a lower degree than normal, and the depth of breathing became much diminished. But the irregular distribution of air in the alveoli did not interfere with the amount of CO_2 in the mixed arterial blood. When in the alveolar air 14 per cent. of oxygen was present, the blood was nearly saturated—i.e., it reached 97 per cent. of saturation. If for any reason breathing became shallower, even if it were of increased frequency, symptoms of want of oxygen were produced, the shallow breathing having merely accentuated the differences existing owing to variations in different alveoli. Prof. Haldane described various experiments made on himself. While lying in bed he was able, he said, regularly to cause Cheyne-Stokes breathing by raising his breathing rate from 7 to 20 per minute.

When pushed to full anæsthesia anæsthetics caused diminution in the vigour of the patient's responses to respiratory stimuli, and so there was diminished oxygenation of the blood. It was apt to be concluded that the continuance of breathing during anæsthesia showed that there was no sign of stoppage, and blueness of lips was likely to be attributed to defective heart rather than to the defective breathing, which caused it. The importance of maintaining the normal degree of oxygenation of the arterial blood was generally not fully grasped; if it was kept appreciably below normal in the ordinary person, headaches and general depression gradually asserted themselves and persisted long after exposure to oxygen-lack had ended. This, he considered, caused some damage—not necessarily gross—of the central nervous system, some alteration in its molecular structure. Yet there might be no evident danger actually during anæsthesia, the effects being manifest after anæsthesia was over. An easy way to avoid them was by adding a small amount of CO_2 to the inspired air, as that was a natural stimulant to breathing. A good method was

to arrange that the patient should re-breathe a portion of his own expired air. In the presence of shallow breathing all parts of the lung were not duly expanded, and hence there was a deficient general oxygenation. Mere increase in the rate of breathing, without an added depth, was relatively useless. Too large a proportion of CO_2 was washed out of the blood, and this caused alkalosis, the consequences of which to the circulation was very serious. It was desirable to add a small amount of CO_2 to the air breathed by patients after operation, especially if the operation had been prolonged. This also brought about more rapid elimination of the anæsthetic from the tissues. Forced breathing—as distinct from deep breathing—removed too large a quantity of CO_2 from the blood and thus brought about alkalosis.

Even when CO_2 is used a definite time is required to bring the patient fairly under the anæsthetic. To do this, not only the blood but the tissues must be saturated sufficiently, and each quota of blood entering and leaving the lungs must contain a certain amount of anæsthetic until the required degree was reached. It had been found that the circulation of the blood through the central nervous system was more rapid than through any other part of the organism. An instrument was needed which would regulate the proportion of the anæsthetic and the amount of CO_2 in the air being inspired by the patient, as was done in the case of the instrument used for miners who inhaled noxious gases in the pits.

Discussion.

Dr. S. R. WILSON (Manchester) said he considered that the occurrence of cyanosis in any form of anæsthesia was unsound. Sometimes, in abdominal operations, when the patient's lips and ears remained a healthy pink, the lips of the abdominal wound were blue. Every method of anæsthetisation implied some degree of re-breathing. Sometimes the surgeon's manipulations greatly reduced the respiration of the patient, for example, when he put a bridge under the thorax when doing a gall-bladder operation, it being thus brought down occasionally to only 40 per cent. of the normal. He considered that the reflex and sensory side of the subject ought to be more fully considered.

Dr. MCMECHAN (U.S.A.) said Major Schroeder's experience in the States was that at the height of 25,000 to 30,000 ft. it was possible to study all the phenomena of analgesia. Aviators found deep breathing a remedy for many of the ills they experienced at great heights. He referred to the work of de Sajous, of Philadelphia, who insisted that there was a basic phenomenon connected with the adrenalin secretion underlying the function of respiration. That authority considered that unless adrenalin was actively secreted and was present in the blood stream, it was difficult for the physiology of respiration to be carried on efficiently. A prolonged operation sometimes annihilated the adrenalin reserve, and then it was difficult to maintain the vital processes. There was a type of patient who was tending towards alkalosis even before anæsthesia was commenced.

Prof. HALDANE replied at some length. He said the blue lips of the abdominal wound referred to could be rendered pink by exposing them to an atmosphere containing 5 per cent. of CO_2, or by bathing them with saline solution. He thought CO_2 would also overcome most of the reflex difficulties. The lowering of the alkaline reserve in the blood should not be regarded, he thought, as evidence of acidosis. He had personally studied the effects on the organism of being in an atmospheric pressure equal to that at a height of 25,000 ft., and in himself the early symptoms were a shakiness in his writing when making the records and a distinct weakening of memory, so that it was necessary to at once enter a figure, or he would forget it.

Dr. J. BLOMFIELD gave an address on

Recent Investigations concerning Nitrous Oxide and the Ignition Points of Certain Anæsthetic Vapours.

Searching for something to lay before the visitors from over the Atlantic which could have escaped even their indefatigable inquiries into all anæsthetic questions, he had been fortunate in having at his disposal the work of a committee whose very existence was probably unknown in Canada and the United States. This was the Anæsthetics Committee set up jointly by the Medical Research Council and the Anæsthetic Section of the Royal Society of Medicine. His remarks would be based almost entirely on the work, partly done and partly still in progress, of this Committee, which consisted of Dr. H. H. Dale, Prof. F. G. Donnan, Prof. M. S. Pembrey, Dr. F. E. Shipway, Dr. C. F. Hadfield, and himself.

Although a good deal of investigation had been done by the Committee on the impurities of ether and on the clinical and laboratory aspects of acetylene, ethylene, and propylene, Dr. Blomfield dealt chiefly with nitrous oxide and with the work which Prof. H. B. Dixon had carried out for the Committee on the ignition points of various vapours. A number of samples of nitrous oxide were examined which were taken from cylinders from which patients had inhaled the anæsthetic and had afterwards exhibited unusual symptoms. The samples had been supplied by various anæsthetists who had found reason to complain of the gas. The outstanding fact which resulted from a large number of examinations was that in no instance was there present any one of the formidable impurities which were suspected to be the cause of the symptoms. That is to say, no halogen, carbon monoxide, or nitric oxide was found in any instance. The impurity most often found was nitrogen, in percentage varying from 2 to 10. It was also made evident by the various experiments that when this gas is present as an impurity in a cylinder of nitrous oxide it is in its highest proportion in the first quantities of gas that escape from the cylinder, and this disproportion between early and later samples is the most marked the more nearly vertical the position in which the cylinder is employed.

Dr. Blomfield described the experiments which Prof. Dixon had carried out on the ignition points of ether, of ethylene, and of propylene. He alluded to the practical importance of Prof. Dixon's determinations and in particular to the fact that ignition of ether did not require, as anæsthetists had been apt to suppose, a red-hot metal or an open flame. When used in ways in which it was often used to-day the ignition point of ether vapour was well below that required to bring metal to a red heat, and it was disregard of this fact that had been responsible for several disasters. The experiments had also brought out the fact that a combination of ethylene and nitrous oxide was more easily ignited than one of ethylene and oxygen—another unexpected finding. With regard to acetylene, the Committee had found that the measures which alone succeeded in removing the acetone present with this anæsthetic were of a kind to render the clinical use of acetylene most inconvenient, even apart from the disadvantage of the unpleasant smell of this agent.

Prof. HALDANE said this contribution brought the subject of anæsthesia into close relation with that of coal-mining in the respiratory aspect. In connexion with rescue apparatus used in mines there was at first considerable difficulty experienced owing to the presence of a considerable proportion of nitrogen as an impurity in the oxygen. This gradually accumulated, and in time became a dangerous factor in suffocation, the miner using and relying upon a closed cavity when perhaps half a mile below the surface. Nowadays there was present in this apparatus only ½ per cent. of nitrogen.

Dr. MCKESSON (U.S.A.) deplored the tendency of some manufacturers to diminish the standard of purity of the drug supplied in order to add to their profits,

by carrying out a less thorough washing process. On many occasions recently he had returned cylinders of nitrous oxide because they did not pass satisfactorily the clinical reactions of the patient and had an unusual smell, though the latter should not be relied upon, as the nose lost some of its sensitiveness when in the presence of the same aroma for several hours. He related one or two cases in the States in which the actual cautery set fire to the vapour in the patient's air passages. One such patient with carcinoma of the tongue was given ether by the open method, and the cautery applied, when an explosion occurred which fractured the base of the skull and projected the eyes on to the cheeks, at the same time producing a hæmorrhage in the air passages.

Dr. WESLEY BOURNE described some work he did on this subject in the Department of Pharmacology, Glasgow, ascertaining the effects of known quantities of impurities added to otherwise pure anæsthetic ether.

Dr. MCMECHAN said he hoped the report of the Committee of which Dr. Blomfield spoke would not be allowed to pass unchallenged. In the States certainly the standard of purity insisted on for these drugs was not nearly high enough. For nitrous oxide a purity of at least 98 or 99 per cent. should be required. He added one or two more cases of explosion to those mentioned by Dr. McKesson. In the case of certain forms of anæsthetic it was very unsafe to allow the patient to light and smoke a cigarette soon after the operation, as so many liked to do.

Mr. A. H. WELLESLEY, speaking as a manufacturer, said it was possible to reach an average purity of 2 per cent. throughout the cylinder of nitrous oxide.

Dr. WILSON spoke of a case in which fulminating pneumonia occurred 18 hours after nitrous oxide administration, and he knew two cases in this country in which a fatal explosion in the mouth occurred.

EDINBURGH OBSTETRICAL SOCIETY.

A MEETING of this Society was held on June 9th, DR. R. W. JOHNSTONE, the President, in the chair. Papers were read dealing with the pathology and treatment of

Concealed Accidental Hæmorrhage.

Dr. J. HEWITT began by considering the common explanations of the retention of blood within the uterus. He agreed with Gordon Ley that non-dilatation of the cervix, adhesion of the membranes around the os, pressure on the lower uterine segment by the presenting part, or rupture of the hæmorrhage into the amniotic sac, did not adequately or correctly explain the condition. In addition to these objections raised by Ley, Dr. Hewitt quoted Barnes's views on the supposed adhesion of the membranes, and added the personal observation that in many cases the blood-clot was entirely retroplacental, and that, even when bleeding extended beyond the placental margin, the blood often travelled upwards towards the fundus and thus never even reached the lower segment.

In view of the inadequacy of these theories, he said, it was not surprising that the opinion arose that the blood was retained because the uterus was unable to expel it, the uterine muscle being described as inert, atonic, or paralytic.

His own view was that the uterus was temporarily unable to undergo rhythmic contractions because it was already in a state of sustained and painful tetanic contraction. His reasons for this belief emerged in answer to the question: Why cannot the fœtal parts be palpated in the cases of concealed accidental hæmorrhage? Rigidity of the parietes was not responsible, as was shown by the fact that in these cases palpation still yielded negative results when the patient was deeply anæsthetised, and even after the abdomen had been opened in the course of a Cæsarean section. Intervention of placenta and blood-clot occurred in some cases; but in others, in which palpation had been negative, manual exploration of the uterus during Cæsarean section or at autopsy often discovered the placenta on the posterior wall. A hard, tender, well-defined uterus was incompatible with the description "atonic," and in concealed hæmorrhage the membranes were tense, which would be impossible in an inert organ. Dr. Hewitt adduced Sir James Mackenzie's dictum that a hollow muscular organ may be distended indefinitely without producing pain until a contraction is set up, in support of his opinion that the uterus was in a state of tonic contraction.

Dr. S. J. CAMERON gave his views on the rational treatment theory based on Dr. Hewitt's. It was most important, he said, to realise that in concealed accidental hæmorrhage the patient's life was endangered more by shock than by hæmorrhage. The amount of blood lost in a fatal case was often much less than was lost by a patient with placenta prævia who survived. As regards the relative importance of shock and hæmorrhage, there was a close similarity between concealed accidental hæmorrhage and acute inversion of the uterus. If bleeding was considered the more important factor, Cæsarean section should be performed on every occasion, but Dr. Cameron did not accept the opinion that it was. Perhaps the most generally practised method of treatment was to pack the vagina. It was claimed that an efficient vaginal plug arrested the flow of blood through the uterine arteries but he did not believe it possible by any method short of actual ligature or clamp to arrest or perceptibly diminish the flow of blood through these vessels, which had a very wide range of movement and merely rose to a high level when packing was introduced into the vagina. Moreover, a liberal blood-supply still reached the uterus by the ovarian arteries which, during pregnancy, were not much smaller than the uterine arteries, and which, with the latter, formed an unconstricted "utero-ovarian loop" on the margins of the uterus, between the aorta above and the internal iliac artery below.

In treating cases of concealed accidental hæmorrhage, said Dr. Cameron, the patient should be guarded from shock by administering large and repeated doses of morphia during the acute stage. When this stage has passed, but not before, labour pains were stimulated by pituitary extract. If the patient did not improve after morphia had been given he performed Cæsarean section, because in his experience one of two events had occurred—viz., a recurrence of bleeding, or rupture of the uterus. So far he had never been compelled to remove the uterus on account of atony. He did not perform vaginal Cæsarean section because: (1) the shock was not less than abdominal Cæsarean section; (2) it was impossible to inspect the uterus for rupture; (3) hæmorrhage was less easily controlled; and (4) towards the end of pregnancy extraction of the child might be difficult.

MEDICAL INSTRUCTION BY PAMPHLETS. — The Wesleyan and General Assurance Society, whose headquarters are at Birmingham, has been issuing through its health service bureau a series of pamphlets on matters of health and hygiene. More than 600 medical officers of health and 150 educational authorities have already made use of these pamphlets, and the three recently published should be as popular as their predecessors. The one on whooping-cough usefully calls attention to the seriousness of this disease, which the public has never respected as it respects the other acute specific fevers—perhaps because there is no rash. The second deals with rheumatism. On the one hand it refers to the dangers and prevention of rheumatic infection in children, wisely calling attention to chorea as one of the manifestations, and on the other describes rheumatism as it affects older people. The third is concerned with the care of the teeth and has a striking cover depicting a crocodile with its mouth open to show a fine set of teeth, with the slogan, "The Crocodile Lives 200 Years." On the backs of the pamphlets are thoughts on health culled from bygone authors and these contain many useful maxims.

Reviews and Notices of Books.

EUGENICS.

The Need for Eugenic Reform. By LEONARD DARWIN. London: John Murray. 1926. Pp. 529. 12s.

THE object which the president of the Eugenics Education Society has had in writing this book is not, we take it, so much to advance any particular views which he may hold himself as to persuade ordinary educated men and women that they must take racial problems seriously and give time and attention to the eugenic method of attempting to improve mankind. It is well adapted to this purpose. Among a great deal of writing on the subject which shows more enthusiasm than common sense, or is frankly propagandist in aim, Major Darwin's survey is conspicuously sober, sensible, and sincere. The subject is full of difficulties, of which the outstanding ones are that we know very little of the genetical structure of individuals (though experience has taught us something of mass inheritance) and that we are not sure what we are aiming at. From this uncertainty it necessarily follows that the author, where he does take a definite line, is sure to be provocative to someone. Take, for example, his summary (p. 327): "Almost every class must on balance be receiving additions from below, and must in consequence be suffering from the inferior quality of its recruits. In short, as far as we can judge from the facts at our disposal, the nation as a whole is slowly and steadily deteriorating as regards its average inborn qualities." It would be difficult to imagine propositions of a more debatable kind or of a higher sociological importance. We hardly think that he really expects to convince us of their truth. What is needed is that we should think about them earnestly, and his book forms an admirable introduction to the closer study which they deserve from everyone who takes part in public life. Of his constructive proposals no one realises the difficulties more than Major Darwin. At some of them it is possible to laugh, which is unfortunate, in so far as it may encourage those who believe that eugenics is unnecessary and that man is still sufficiently an animal to adapt his effective multiplication to his circumstances without much deliberate thought.

BASAL METABOLISM IN HEALTH AND DISEASE.

By EUGENE F. DUBOIS, M.D., Medical Director, Russel Sage Institute of Pathology; Associate Professor of Medicine, Cornell University Medical College. Philadelphia and New York: Lea and Febiger. 1924. Pp. 372.

Dr. Eugene DuBois has probably done more work on the subject of basal metabolism in disease in recent years than any other man, and his book therefore ranks as an authoritative presentation of the subject. The first half of the volume deals with physiology, the methods used in measuring, and the standards on which the normal basal metabolism is assessed. Dr. DuBois quite rightly points out that in the Tissot and the Douglas bag method of measuring respiratory exchange the volume of the inspired air is greater than the expired air, so that the oxygen intake cannot merely be obtained by subtracting one percentage of oxygen from another, and multiplying by the pulmonary ventilation and dividing by 100. He might well have explained how by calculation these errors can be obviated. The lack of insistence on this possible source of error in recent monographs suggests that this error is not corrected in some of the work carried out at the present day by this method.

The other half of the book contains an account of metabolism in disease wisely enough not confined to basal metabolism. He also considers observations made on the increased respiratory exchange after the intake of foodstuffs, a subject that may be of importance in explaining the cause of obesity. A chapter on metabolism in fever is of special interest and, needless to say, the metabolism in thyroid disease is very fully considered. The subject of diabetes is also treated from a wider aspect than merely that of the basal metabolism; this section is a particularly valuable one, though it is a pity that the author does not state more definitely whether he believes that the low respiratory quotients so often obtained are, or are not, due to a conversion of fat into carbohydrate. The evidence, though not conclusive, appears to favour the former view.

The description of the various standards of comparison is particularly useful. Dr. DuBois is inclined to believe that the metabolism is proportional to the surface area in normal individuals. It is surprising to find him applying the same law to such frankly abnormal subjects as the obese. He quotes with approval Means's observations that in this condition because the metabolism is proportional to the body surface the body metabolism in the obese is unaltered. But is it right to apply the body surface law at all to such a condition? Would not the covering of fat be expected to diminish the loss of heat? Again, the extra weight of the individual is due to fat. Is there any evidence that the number of cells in the body is increased in this condition? In any case the metabolism of mere adipose tissue must be extremely low. To us it would seem that Means's result is a proof that the metabolism in obesity is abnormal—i.e., much higher than would be expected—and that in these cases it can be explained by a luxus consumption following on an excessive food intake. Of course, such a view does not apply to cases of obesity which are of endocrine origin, and in some of these cases there is no doubt that the metabolism is low. It would seem desirable to regard patients as physiological units and to use as a standard the metabolism calculated from the predicted weight of the individual, or the weight of the patient before he became fat.

HISTOLOGICAL TECHNIQUE.

By H. M. CARLETON, M.A., B.Sc., D.Phil., University Lecturer in Histology, Oxford. Chapters VII. and VIII. in collaboration with FREDERIC HAYNES, B.A., Demonstrator of Histology. Oxford University Press, Humphrey Milford. 1926. Pp. 398. 16s.

PRACTICAL text-books can never replace the actual experience of the laboratory, but such manuals must always be necessary unless science is to be bound by oral tradition. With the help of the written word the tyro may postpone, even indefinitely, the moment when the patience of his teacher becomes exhausted; and the expert is glad from time to time to refresh his memory. Dr. Carleton's book will prove both a safe guide for the beginner and a valuable companion for the more experienced worker. It is essentially practical and is full of just those useful tips which make all the difference between complete success and mediocrity in this exacting science.

The first part deals with the cell as a structural unit and a physico-chemical entity, and outlines the methods employed in histology. Part 2 treats of histological methods in detail. Part 3 describes the accessory methods in use—dark-ground illumination, histo-chemical tests, injection methods, and vital staining. In Part 4 the methods for special organs and tissues are described, and in Part 5 the technique of morbid histology, bacteriology, and parasitology.

In a book of this size it is obviously impossible to include everything; many methods and modifications of methods must necessarily be omitted. We should have been glad to see more emphasis laid on the value of carbon bisulphide as a clearing agent, or butyl alcohol as recommended by F. W. Twort, and those extremely useful decalcifying agents, Perényis' and Jenkins's fluids might well have been included. The small Cambridge rocker and the humble razor receive scant recognition; nevertheless, with these an amount of first-rate material can be dealt with which would astonish the inhabitants of an ordinary histo-

logical laboratory. There, however, are minor criticisms which do not detract from the general excellence of the book.

PRACTICAL MICROSCOPY.

Third edition. By F. SHILLINGTON SCALES, M.A., M.D., B.Ch. Cantab., University Lecturer in Medical Radiology and Electrology, Cambridge. London: Baillière, Tindall and Cox. 1926. Pp. 332. 8s. 6d.

THE third edition of this manual has been revised and brought up to date without, however, any extensive alterations to the size in scope of the volume. The choice of an instrument, the structure and use of the various accessories, photomicrography, practical optics, and microscopic technique are dealt with simply and adequately; and Dr. Scales's little book remains a safe and adequate guide to those beginning the study of microscopy.

MANUAL OF DETERMINATIVE BACTERIOLOGY.

Second edition. By HENRY BERGEY, University of Pennsylvania, Philadelphia, U.S.A. Assisted by a Committee of the Society of American Bacteriologists. Baltimore: Williams and Wilkins Company; London: Baillière, Tindall and Cox. 1925. Pp. 462. 25s.

THE second edition of this now well-known manual of bacterial classification appears a little over a year after its original publication, and is in size and form but little altered, although some alterations have been made in the generic names for reasons of priority. The chief noticeable changes in the manual are the correction of certain errors and the rectification of some defects which we pointed out when reviewing the first edition:—notably the failure to include synonyms in the index, which formerly made it impossible for an organism to be traced by one who was not conversant with the system in use, and the lack of descriptive headlines to the pages, the introduction of which facilitates rapid reference. Even so the book is not easy to find the way about in, and we would suggest that in a future edition a tabular statement might be inserted at the commencement showing the inter-relationships of the various orders, families, and tribes. We notice that the page references in the short but important section which details the method of identifying an unknown organism from a knowledge of its characters (pp. ix.–xi.) are not always correctly given. The nomenclature in use is often cumbersome, and lacking in attraction for the medical bacteriologist who deals with only a relatively few organisms and is concerned in his groups with minutiæ of differentiation which are of no interest to botanists and commercial bacteriologists. This tends to make him intolerant of the involved and laborious terminology which is here presented, but he must realise, and the perusal of recent literature makes it evident that he is beginning to realise, that a more exact classification is desirable than one which includes the influenza organism, the diphtheria bacillus, and the tetanus organism in the same genus. For this reason Bergey's manual must be welcomed, and even if the classification of the Society of American Bacteriologists does not survive in its entirety there is no doubt that it marks an important stage in the history of this branch of biological study.

MESENTERIC VASCULAR OCCLUSION.

By H. J. COKKINIS, M.B., B.S., F.R.C.S., Surgical Registrar, London Lock Hospital. London: Baillière, Tindall and Cox. 1926. Pp. 159. 10s. 6d.

THIS is a monograph on what is usually regarded as a very rare disease, of which the author has been able to collect 76 hitherto unpublished cases. The anatomy of the blood-supply of the intestine is described and experiments to show the effect of occlusion of vessels brought forward. The clinical findings consistently agree with the results of these experiments. There follow a useful description of symptoms and guides to the diagnosis and treatment. The book forms a definite contribution to the subject.

A VILLAGE ON THE THAMES.

Whitchurch, Yesterday and To-day. By Sir RICKMAN GODLEE, Bart., K.C.V.O., M.S., F.R.C.S. With a Memorial Sketch by Sir GEORGE NEWMAN, K.C.B., and a Foreword by Lady GODLEE. London: George Allen and Unwin, Ltd. 1926. Pp. 283. 7s. 6d.

A SIDE of Sir Rickman Godlee's life well known to a large circle of friends though little revealed in his scientific and biographical writings is illustrated by this study of the history, local and natural, of Whitchurch, where his charming country house, Coombe End Farm, was situated. The book is not a detailed story of the village such as finds its way into weighty county histories—in respect of Whitchurch much of this work had been previously done by Canon Slatter, who is frequently cited by Sir Rickman Godlee. Part of the volume appeared in short chapters in the parish magazine at the invitation of the incumbent, and these, especially the earlier sections bear the imprint of their intended audience; but the author's wide knowledge of natural history and far-ranging if desultory antiquarian studies have carried him beyond his original design, with the result that we obtain from him résumés of subjects which often form the basis of learned discussions and sometimes of legal interpositions. He deals, indeed, with all sorts of historical and geological points as they are illustrated by the site and soil of the angle in the Thames Valley represented by Whitchurch and Pangbourne. In the chapters entitled "Our Mammals," "Some of Our Birds," "Beneficent Birds," and "The Gamekeepers' Larder" he appears as a field naturalist of high order with a large range of exact knowledge under which to classify his observations, and on page after page familiarity with what may be called rural phenomena is apparent. Interesting chapters deal with the rectors of Whitchurch, Whitchurch bridge, and the names of the various meadows, lanes, and pits in the village and vicinity. The study of place names "is frightfully difficult but so absorbing that some people devote their whole lives to it," says the author, but the study has the greatest importance in local history because of the relative permanence of such names, even though their origins and significance seem impossible to trace.

We recommend this unpretending volume to all country dwellers. Certain of the charming illustrations are reproduced from water-colour sketches by Lady Godlee, others are from aquatints by Joseph Farington, who executed a whole series of Thames views, and one of the most effective, "The Thames in Flood," is from a water-colour drawing by the author himself.

JOURNALS.

GUY'S HOSPITAL REPORTS. No. 2. April, 1926 (Vol. VI., Fourth Series).—"A. F. H." contributes an obituary of George Herbert Hunt. This is followed by a paper on heart disease and pregnancy by Hunt, edited by J. M. H. Campbell, in which, as a result of work carried out in the five years before his death, Hunt concludes that, provided the heart is not enlarged, patients with mitral disease stand pregnancy well; if the heart is enlarged the risk is greater and very similar whatever the valvular lesion present, while in auricular fibrillation the result of pregnancy is disastrous.—G. W. Rake describes a case of annular muscular hypertrophy of the œsophagus and discusses the findings.—W. E. Tanner gives an account of a case of dysphagia due to a posterior pharyngo-œsophageal pouch.—The association of chronic duodenal ileus with gastric and duodenal ulcers is the subject of a series of papers. A. F. Hurst had previously shown that the presence of chronic duodenal ileus would predispose to ulcers in this region, and

this receives ample confirmation from the cases here published by A. F. Hurst and P. J. Briggs, R. P. Rowlands, J. Gaymer Jones, and J. A. Ryle.—The correct treatment of acute obstruction of the small intestine is the subject of a paper by R. P. Rowlands, who discusses the need for early diagnosis and describes a temporary valvular enterostomy as the operation of choice in this condition.—A case of chronic volvulus of the pelvic colon simulating pyloric obstruction radiologically diagnosed and successfully resected is described by A. F. Hurst.—Seven cases of ball-valve accumulations in the rectum form the subject of a paper by J. A. Ryle, who discusses the causes, symptoms, diagnosis, and treatment of this condition.—F. A. Knott contributes a short study on the use of salicylates in gall-bladder disease. He finds as a result of animal experiments that the average concentration of sodium salicylate in the bile after oral administration in pharmacopœial doses of any of the ordinary compounds is very small as compared with the minimum concentration necessary to obtain bactericidal effects in the biliary tracts.—Two cases of secondary sarcomatous deposits in the brain are described in detail by J. G. Weston.—G. W. Nicholson continues his studies on tumour formation, dealing in this part of his paper with ectopic endometrial tumours. He gives an account of the nomenclature and histology of the condition and discusses the pathology, classification, and origin of these tumours, giving a broad summary of the literature.

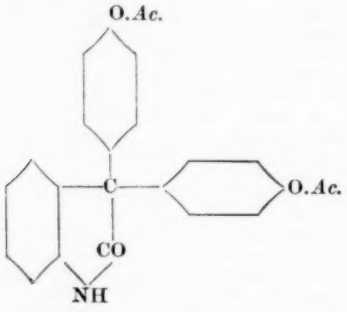
THE CANCER REVIEW.—A Journal of Abstracts. Bristol: John Wright and Sons. Subscription 30*s.* per annum.—This is the first number of a new journal issued under the direction of the British Empire Cancer Campaign and having as its object the publication of abstracts and reviews of current contributions to the literature on cancer. The journal will appear in ten numbers during the year. It is under the editorial control of a committee composed of Dr. F. Cavers, the General Editor, Dr. W. Cramer, Dr. C. E. Dukes, Prof. H. Shaw Dunn, Dr. H. J. B. Fry, Dr. M. Greenwood, Dr. E. L. Kennaway, Dr. P. J. Kerley, and Prof. C. A. Pannett. The members of the Editorial Committee have been responsible for the abstracts, which number over 100. The abstracts are conveniently grouped under five headings: (1) General, (2) experimental and biochemical, (3) clinical and pathological, (4) radiological, (5) statistical. An author's index is also provided. The abstracts are full, clear, and critical. The literature on cancer is overburdened with statements based on little or no reliable evidence, and if the journal succeeds in giving a critical reflection of current work on cancer it will fulfil a useful purpose.

Reports and Analytical Records.

ISACEN: ROCHE BRAND.

(HOFFMANN-LA ROCHE CHEMICAL WORKS, LTD., 7–8 IDOL-LANE, LONDON, E.C. 3.)

Isacen, which is described as a new synthetic non-toxic purgative, is diacetyldihydroxyphenylisatine which has the structural formula



This compound is a white powder melting at 242° C. It is saponified by alkalis with the formation of dihydroxyphenylisatine. In consequence of its insolubility in water and dilute hydrochloric acid "Isacen" passes through the stomach unchanged. In the alkaline medium of the intestine the acetyl groups are slowly broken off and dihydroxyphenylisatine liberated, which can then exercise its specific action on the colon.

When submitted to analysis the tablets of "Isacen" gave the following results:—

Average weight of each tablet	3/5	gr.
Isacen contained in each tablet	1/13	,,
Petroleum ether extract	0·44	per cent.
Alcohol extract ("Isacen," m.pt. 242° C.).	12·60	,,
Water extract (dextrin, &c.)	37·80	,,
Filling (wheat starch)	49·16	,,

On saponification with alkali the correct amount of acetic acid is liberated.

VITALIA MEAT JUICE (LIQ. HÆMOGLOBIN DULC.).

(VITALIA LIMITED, 17A, BONIFACE-STREET, WESTMINSTER BRIDGE-ROAD, LONDON, S.E. 1.)

We have previously noticed this preparation of British origin, which according to the published analysis contains: water, 81·70 per cent.; total ash, 1·07 per cent.; sodium chloride, equivalent to chlorine, 0·25 per cent.; total phosphoric acid, 0·05 per cent.; total nitrogen, 2·50 per cent.; hæmoglobin, 8·00 per cent. The percentage of hæmoglobin is, of course, a point in its favour, and as it is produced by a cold process the natural vitamin content is preserved. Meat juice is a convenient form of nutriment in many conditions, especially where a rapidly acting tonic is indicated, and this particular preparation has been found valuable, the assimilable sustenance inducing sleep where the patient is liable to awake after short periods. In the exhaustion after severe operations and illnesses it can be easily digested by the weakened subject. Vitalia meat juice is palatable and is put up in bottles of 1, 2, 4, 8, and 16 ounces. The dose is one to two teaspoonfuls for an adult, half a teaspoonful for children, and 5 to 15 drops for infants. It should be diluted with four times as much cold water or milk and taken three times a day, or more frequently in severe illness.

ANGOSTURA BITTERS.

Messrs. Henderson and Co., the consignees of the preparation "Carypton and Angostura Bitters" noticed in our columns on June 26th last, complain that we have fallen into the serious error of stating that Angostura bitters "are commonly supposed to be compounded of Angostura bark (cusparia)." The authority for the belief will be found in Thorpe's Dictionary, article Cusparia Bark, written by Prof. Barger, and the B.P. Codex (1907, page 303), article on Cusparia. There is no characteristic test known to chemists which will detect small quantities of the constituents of Angostura bark which Messrs. Henderson say is not one of the contents of Carypton and Angostura bitters. That product they state to be named after the town of Angostura in Venezuela. The satisfactory result, however, on analysis would appear to be the really important thing and not whether the bitter properties were obtained from cusparia or whether the popular name is a place name. We accept the statement, of course, that the name "Carypton and Angostura Bitters" has a geographical and not a botanical significance.

MATERNITY AND CHILD WELFARE.

CONFERENCE AT WESTMINSTER.

THE Fourth English-speaking Conference on Maternity and Child Welfare was held at the Caxton Hall, Westminster, from July 5th to 8th, and over 700 delegates attended. Sir Kingsley Wood (Parliamentary Secretary to the Ministry of Health) acted as President in the unavoidable absence of Mr. Neville Chamberlain.

In his presidential address Sir Kingsley Wood emphasised the need for complete coöperation between voluntary societies and the statutory health authorities. He referred to the slight set-back which there had been during the last two years in the decline of the infant mortality-rate, and to the high rates still prevalent for still-births and maternal mortality. More effectual antenatal supervision and more maternity hospital beds were needed, though progress in these directions had been made during the last two years. Seventy per cent. of the rural population were now provided with trained midwives, and he hoped that the Midwives and Maternity Homes Bill, when it came into operation, would raise the standard of maternity homes. The Ministry of Health hoped to do something in the near future to promote better housing in the villages and rural districts. But it needed the backing of public opinion, and congresses such as the present one were the best means of educating the public.

The Well-being of Children from One to Five Years Old.

At the first session Dame Janet Campbell (Ministry of Health) opened a discussion on this subject. There was, she said, a gap in medical supervision between infancy and school entrance which was not being filled. The child at this age was particularly vulnerable to the onset of disease. It was liable to develop digestive and nutritional disorders; respiratory, aural, and nasal affections; squint; the infectious fevers and all the sequelæ which occurred after such diseases as measles, whooping-cough or acute anterior poliomyelitis. The best means of reducing this incidence were: (1) better education of mothers in the management of the ex-baby; (2) periodical skilled supervision; and (3) facilities for early treatment. Competent health visiting would probably do more than anything else to raise the standard of health of the pre-school child. Special sessions should be held at the infant welfare centres for ex-babies: facilities for treatment at the school clinics should be extended to the children under 5, and better provision should be made for the adequate nursing of infectious diseases. Modern methods of immunisation ought to be considered in the case of diphtheria and scarlet fever, and orthopædic treatment ought to be arranged for in cases of tuberculosis, infantile paralysis, rickets, and the like.

Miss W. B. Ireland (New York) quoted the remarks of a health official to the effect that, although the need for pre-school work was realised, they had first to reach a greater percentage of the infants, to secure better supervision of school children, and to carry out an intensive antenatal programme.

Prof. de Buys (Tuluana University, New Orleans) said that the infant should come under the care of the pædiatrician from the moment of birth, and described the arrangements which were made in a New Orleans maternity hospital. Practically all the babies, he said, were breast-fed, and in order to prevent the initial loss of weight, they were supplied with the milk of other mothers during the first few days. Great care was given to the preparation of the breast, and there had been no case of fissured nipples or abscess of the breast during five years. Puerperal pyrexia, he said, was never due to the breasts if the axillary glands were not enlarged. Mother and infant were usually discharged at the eleventh day, though occasionally the infant was kept in longer. All babies were brought up for examination at the end of the fourth week, and there was a regular follow-up system. This supervision from the beginning was essential for the study of birth injuries and the diseases and tendencies of the very young child.

An animated discussion followed, in the course of which it was remarked that it was easy enough to get the ex-baby to the centre, but very difficult to get him fed properly. Health visitors, it was suggested, needed more knowledge of cooking and how to lay out the housekeeping money, and regret was expressed that the free milk-supply had dwindled away.

The Crippling Diseases of Childhood.

At the second session Dr. F. J. Poynton (London) described the present want of knowledge concerning the prevention of rheumatic heart disease in childhood. Acute rheumatism under the age of 5, he said, had not really been investigated. In children acute rheumatism was largely a town disease. Amongst other factors he thought that scarlet fever, measles, and diphtheria might predispose to it, but he was doubtful whether diet had any definite influence. The part played by streptococci in the ætiology required investigation, and more complete knowledge about the school conditions which gave rise to rheumatism was wanted. The damaged heart of a child, said Dr. Poynton, needed coaxing forward, and its treatment should not be the same as that given to the damaged heart of an old person. He sounded a note of warning against the formation of numerous special heart clinics.

Dr. G. R. Girdlestone (Wingfield Orthopædic Hospital) dealt with other forms of crippling and insisted on the supreme value of early discovery and prompt treatment. The discovery that something was going wrong must be made while the child was still like other children. Those in charge of children must be on the look-out for limps; they must take the child to the orthopædic clinic at once. In tuberculous cases the tuberculosis officers had power to arrange for payment. The danger of infection from properly treated surgical tuberculosis was nil. In infantile paralysis much good could be done if the child was taken into hospital at the earliest possible stage of the acute disease.

During the discussion congratulations were accorded to Dame Agnes Hunt on the recognition of her work in inaugurating the movement for the salving of cripples. The need for unity of effort and better coöperation between all the organisations working for child welfare was ably voiced by Miss Margaret Beavan (Liverpool Child Welfare Association).

The Father's Part in Child Welfare.

On the second day Dr. James Fenton aroused much interest by his description of the Father's Council, organised in connexion with the welfare centre at Lancaster-road, Kensington. Many of the subsequent speakers expressed their intention of organising similar councils in their districts.

The value of light treatment was discussed by Dr. C. W. Saleeby, Dr. Stella Churchill, Dr. Stanley Banks, and Sir Leslie McKenzie.

Speakers at the afternoon session, which was devoted to publicity methods, included Lord Riddell, and Dr. J. E. Sandilands (Bombay). Mr. Sydney Walton (Harrow) urged that each hospital should have its information committee or company of torch-bearers. Hospitals should be lighthouses as well as lifeboats. Reports should be humanised and they should not be written in officialese, and committees should find out local residents who could write attractively. A mother's bookshop ought to be established in every large centre of population, and attractive leaflets distributed from door to door. The New York Metropolitan Insurance Co., said Mr. Walton, issued model leaflets.

Midwifery in the Homes of the People.

On the third morning a joint session with the Royal Sanitary Institute to discuss this subject attracted a large audience. The points of view of the midwife the district nurse-midwife, the consultant, the medical

officer of health, the general practitioner, and the health visitor were described by selected speakers.

Miss Doubleday (Midwives' Institute) said that the midwife was capable of doing her own antenatal supervision and had great opportunities of educating both father and mother in their own home. The public must be made to understand that antenatal work was part of midwifery and that it should not be paid for separately.

Miss Fowler (Q.V.J.I.N.) pointed out that suitable women were deterred from taking up midwifery by the fact that they had to compete with the so-called handy woman. There was room for the handy woman as home help. The Midwives' Institute wanted the aid of consultant gynæcologists for the practising midwives, and would like to see post-mortem examinations made in all cases of maternal death from childbirth.

Dr. T. Watts Eden (London) enumerated the conditions necessary for safe confinement in the home, and pointed out that puerperal sepsis was actually less among extern than among intern cases in hospital practice.

Dr. W. Allen Daley (Hull) said that in some districts midwives did no antenatal work, and that in others there was antagonism between the midwives and the antenatal centres. Midwife inspectors should be educators and not detectives. Midwives must be paid more highly, but there must be no fee from the patient for antenatal work.

Dr. E. K. Le Fleming (British Medical Association), speaking as a general practitioner, said that it was all right to jeer at the handy woman if an efficient substitute was to be had; he could not conceive of a general practitioner preferring a handy woman to a properly trained and sensible midwife. District nurses in the country could do the work of the antenatal clinic in the town. Women did not like to go to a clinic, deserting their own doctor and nurse. More hospital beds were needed, but they would be useless without proper means of transport.

Miss Paterson (New Zealand) stated that in view of the high childbirth mortality in New Zealand, she had been investigating the midwifery service of the European countries with a low mortality. In Denmark midwives attended all cases and called in specialists when required. In Holland great attention was given to antenatal work.

Dr. Leon Jona (Melbourne) said that midwifery should be carried out by specialists only.

Dr. Dickenson (New York) said that the midwife waited for Nature, whereas the doctor did not; therefore the midwife's cases did better than the doctor's.

Mrs. Bernard James mentioned that there were now district nurse-midwives in every district in Buckinghamshire.

The discussion, therefore, brought out a strong body of opinion that confinements should, as a rule, take place in the home, and that the desire for hospital confinements is chiefly due to the housing scarcity.

The Churches and the Child.

On the afternoon of the third day a debate on the Churches and the Child was held under the auspices of the National Council for the Unmarried Mother and Her Child. During the discussion the speakers, who represented many religious beliefs—all laid stress on the importance of caring for the bodily and mental, as well as the spiritual, welfare of the mothers. The rescue work of the Salvation Army was described by Commissioner Adelaide Cox.

The Chief Rabbi said that in poor districts the Jewish infant mortality was only half the non-Jewish. All Jewesses, he said, fed their children at the breast; there was no baby-farming among them and no use of patent foods "as good as mother's milk." There was a total absence of alcoholism among poor Jewesses all over the world.

Mr. J. H. Lidiard pleaded for an effort to house the people in such a way as to prevent the need for rescue work. He described the efforts of Church Army Housing Ltd., which provided houses for tenants at reasonable rates by getting rid of the uneconomic portion of a new house. This was done, he said, by securing donations or mortgages at 2½ per cent. instead of 5 per cent. For example, a house costing £600, by means of a donation of £300, could be let at the rental of a house costing £300. Such companies, he suggested, might be formed widely.

The discussion made it clear that all over the world the churches are now taking more interest in hygiene. The opinion was, however, expressed that a great deal more might be done by religious bodies to fight the "denial of children."

During the conference a number of round-table discussions took place. Dr. S. G. Moore (Huddersfield) showed that child welfare was a more profitable proposition than tuberculosis work, and was, in fact, the best method of preventing tuberculosis. A discussion on whether welfare centres should give advice about birth control brought out the usual difference of opinion on this controversial subject. Other round-table conferences dealt with the provision for mentally deficient children under the school age and the prevention of congenital syphilis. There was also a lecture by Dr. Saleeby, and one by Dr. Douglas White (Eugenics Education Society) on the Consequences of Heredity and Environment in Child Welfare. Many visits to child welfare institutions were made.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

Tonsils and Adenoids.

The Maternity and Child Welfare Group held its annual meeting during the conference, at which it discussed Tonsils and Adenoids.

Mr. George Waugh (London) gave an interesting history of the evolution of the operation of tonsillar enucleation at the Hospital for Sick Children, Great Ormond-street. When the operation was instituted some 20 years ago, he said, it was hoped that it would abolish gland surgery, ear discharges, and mastoid disease. The harvest of results had not proved disappointing, and as the years went by more and more conditions had been added to the list of those cured or benefited by tonsillectomy. These included dyspepsias, malnutrition, dyspnœa, croup, recurrent bronchitis, and broncho-pneumonia. The operation had been found beneficial for diphtheria carriers and as a prelude to the repair of cleft palate. Cases of cyclical vomiting and nephritis also improved after the removal of a tonsillar septic focus. Carditis of rheumatic origin had not been tackled on a large enough scale in this country. In toxic irritability of the heart the results had been disappointing when the removal of the tonsil was incomplete, but had improved after enucleation was adopted. In some cases of anæmia the results were good, and where there were enlarged mediastinal glands and suspicious signs at the left apex enucleation of the tonsils might avert the threat of sanatorium life. Eye diseases in connexion with ear and throat trouble had benefited. There was no age limit, said Mr. Waugh, for the removal of septic foci, and 1385 operations had been on patients under the age of 2 years; the range was from 3 weeks to 70 years. The test of disease in the tonsils was not inspection but rather the question: Can concurrent ailments be explained in any other way? Unsuspected abscesses had been found in 3000 cases amongst 30,000 operated on. Anyone could learn the technique of the enucleation operation in six months, though bad tonsillar surgery unfortunately abounded.

Dr. R. C. Clarke (Bristol) said that he thought that the tonsil was a useful organ until it was knocked out. Catarrh should, if possible, be prevented by protecting children from carriers of infection, but he did not believe in the causes usually supposed to lower resistance to catarrh, such as wet feet and clothes, rickets, and diet. The local resistance of the nasal mucous membrane was very low in infancy and much more might be done to protect the infant from infection.

Dr. H. K. Waller (London) read a paper on the early symptoms and signs of ill-health associated with tonsils and adenoids. Nasal trouble, he said, often led to bottle-feeding because the baby was unable to get the milk out of the breast. Herding in houses in the winter was a common cause of catarrh. Infection conferred no immunity. An excess of carbohydrate in the diet of the ex-baby was one predisposing cause.

Dr. Octavia Lewin (London) said that a more systematic effort should be made to keep the baby's nose clear and to prevent "nasal constipation."

The Services.

INDIAN MEDICAL SERVICE:

SPECIAL RECRUITMENT, 1926.

THE Secretary of State for India announces that a Committee will be held at the India Office in the near future for the selection of European candidates for direct appointment to permanent commissions in the Indian Medical Service on special terms which include a gratuity of £1000 after six years' service, or £2500 after 12 years' service, together with free return passage to any officer so appointed who no longer desires to remain in the Service. Otherwise the terms will be as detailed below.

Appointment.—Conditions of Service.

Candidates must be under 32 years of age at the time of application, and must possess qualifications registrable in Great Britain and Ireland under the Medical Acts now in force.

Up to the present time Indian Medical Service officers have been employed both in civil and military departments of Government, and have been interchangeable between the two. The practice as regards employment in the civil and military side of the Service has been as follows.

At the beginning of his career an officer was employed on the military side, which has medical charge of the Indian Army. If he remained in military employ he held a post on the staff of a station hospital, or a specialist post, or a post on the administrative staff of the army, promotion being on a time-scale up to the rank of lieutenant-colonel and by selection to the ranks of colonel and major-general. He could, however, if he chose, apply, after two years' Indian military service, to be registered as a candidate for transfer to the civil side, from which appointments are made to civil surgeoncies, established at the principal civil centres to provide for the medical needs of civil officials and for general medical administrative purposes and to the specialist services (for example, public health, bacteriological and research departments, and the professorships at the medical schools). Such transfers normally took place after about seven years' service in military employment.

The Lee Commission has, however, recommended certain changes in the organisation of the medical services in India, and in view of their recommendations only military employment can be guaranteed to officers entering the Indian Medical Service at the present time. It is, however, guaranteed that they will be eligible for civil employment under such conditions of service as may be made applicable to officers in future appointed to the Indian Medical Service as a result of decisions taken on the Lee Commission report.

Private Practice.—War Service.

Executive medical officers in both civil and military employment may attend persons unconnected with Government service provided their duty admits of it. Candidates are, however, informed that while serving on the military side the opportunities for private practice are not great.

Service during the war as a medical or combatant officer or in a position usually filled by an officer, counts towards promotion and pension so long as the rights of officers who have entered by competition are not interfered with.

Pay.

The monthly rates of pay for European officers in the Service are as follows:—

Rank and service in rank.	Basic pay.	Overseas pay. If drawn in sterling.	Overseas pay. If drawn in rupees.	Year of total service.
	Rs.	£	Rs.	
Lieut.	500	—	150	First
		—	150	Second
		—	150	Third
Captain:—				
1. During first three years' service as Captain.	650	—	150	Fourth
		15	150	Fifth
		15	150	Sixth
2. With more than three and less than six years' service as Captain.	750	25	250	Seventh
		25	250	Eighth
		25	250	Ninth
3. With more than six years' service as Captain.	850	25	250	Tenth
		25	250	Eleventh
		30	300	Twelfth
Major:—				
1. During first three years' service as Major	950	—	—	—
2. With more than three and less than six years' service as Major	1100	—	—	—
3. With more than six years' service as Major.	1250	30	300	Thirteenth and over.
Lieut.-Colonel:—				
1. Until completion of 23 years' total service	1500	—	—	—
2. During twenty-fourth and twenty-fifth years' total service..	1600	—	—	—
3. After completion of 25 years' total service	1700	—	—	—
4. When selected for increased pay ..	1850	—	—	—

Note.—Until the completion of 23 years' total service basic pay is regulated according to rank and service in rank (column 1) which, owing to the system of accelerated promotion, may be in advance of the time-scale of promotion. Overseas pay is regulated solely with reference to length of total service (column 5).

In addition to grades there are a number of appointments as colonels on Rs.2200 to Rs.2500, according to the appointment held, and as major-general on Rs.2750. The appointment of Director of Medical Services in India, carrying pay at Rs.3200 per mensem, may also be held by an officer of the Indian Medical Service.

It may be pointed out to intending candidates that the initial rates of pay for the Indian Medical Service, as for all Government departments, are based on the assumption that the majority of newly appointed officers will be bachelors. It is also the case that an officer, when junior, is liable to more frequent changes of station than later on in his service, and he may therefore be put to considerable expense for transfers if he has a family. Officers, therefore, who join the Service, married, may have considerable difficulty in living within their pay during the first few years of their service.

Extras: Outfit and Allowance.

Extras.—In addition to the above rates, officers in military employment, when in command or second-in-command of the larger station hospitals, receive special allowances. On the civil side there are public health, bacteriological, research, and professorial appointments carrying special enhanced rates. Special rates of pay are attached to the administrative appointments open to officers in both branches of the Service.

Officers on appointment will receive an outfit allowance of £50, subject to certain provisions as regards previous commissioned service in any branch of His Majesty's forces.

Pensions.

The rates of pensions are as follows :—

Service.	Rates per annum.	Service.	Rates per annum.
After 17 years ..	£400	After 23 years ..	£620
„ 18 „ ..	430	„ 24 „ ..	660
„ 19 „ ..	460	„ 25 „ ..	700
„ 20 „ ..	500	„ 26 „ ..	750
„ 21 „ ..	540	„ 27 „ ..	800
„ 22 „ ..	580		

The above rates are subject to revision, upwards or downwards, to an extent not exceeding 20 per cent. in all, on account of a rise or fall in the cost of living, as compared with the year 1919. A deduction of 4 per cent. on this account has already been made. A further revision may take place on July 1st, 1927, and every three years thereafter.

There are additional pensions ranging from £125 to £350 per annum for officers who have held high administrative appointments as colonels or major-generals. These pensions are not subject to the above reduction.

Passages.

Officers on appointment are, when possible, provided with passage to India by transport. When such accommodation is not available passage at the public expense is provided by private steamer, or passage allowance is granted if preferred. The wives and families of officers who are married prior to the date of the officer's embarkation on first appointment to the Indian Medical Service will also be provided with free passage to India at the public expense under the same conditions as those applicable to the officers themselves.

Indian Medical Service officers are also eligible for passage concessions under which they are granted a certain number of return passages home at Government expense during their career.

Increased Cadre.

The allowance for furlough has been increased to 25 per cent., and the cadre has been increased 2½ per cent. for study leave, making a total of 27½ per cent. There are special allowances for officers whilst on study leave.

Further particulars can be obtained on application to the Secretary, Military Department, India Office, Whitehall, London, S.W. 1. Letters should be marked "Recruitment for I.M.S."

The King has approved the grading of the following officers in the Indian Medical Service :—

Capts. C. MacD. Nicol, D. V. O'Malley, L. G. Pearson, J. H. Barrett, T. H. Thomas, J. Carrey, G. H. Fraser, and W. H. Critien.

Maj. R. G. Shaw officiates as Consultant Dermatologist in India, Army Headquarters, vice Maj. T. H. Scott on leave. Capt. F. H. Whyte has been appointed Specialist in Surgery, United Provinces District, vice Maj. R. C. Clifford, vacated. Capt. E. C. Linton has been appointed to charge of Brigade Laboratory, Jhansi, vice Capt. G. D. Jameson, vacated. On relief by Maj. H. L. Batra, Capt. E. R. Daboo, officiating Civil Surgeon, Sibsagar, acts as Civil Surgeon, Sadiya Frontier Tract. Lt. B. S. Nat has been appointed Specialist in Surgery, Waziristan District, vice Capt. F. H. Whyte. Capt. R. C. Wats to be Deputy Director of Pathology, Waziristan District, vice Maj. S. S. Sokhey. Maj. G. L. Duncan to be Deputy Director of Medical Service, Western Command, vice Maj. H. M. Inman. Lt.-Col. A. H. Proctor, Civil Surgeon, Darjeeling, acts as Surgeon Superintendent, Presidency General Hospital, Calcutta, vice Lt.-Col. E. E. Water. Lt.-Col. C. A. Godson, Civil Surgeon, Hooghly, has been appointed to hold medical charge of Civil Station of Serampore. Maj. P. F. Gow, officiating Civil Surgeon, Murshidabad, has been transferred to Hooghly. Capt. B. H. Singh, Resident Medical Officer, Medical College Hospital, Calcutta, officiates for him as Civil Surgeon, Murshidabad. The services of Capt. S. N. Hayes, Professor of Operative Surgery, King Edward Medical College, Lahore, have been placed at the disposal of the Department of Education. Lt.-Col. R. Kelsall, Physician, General Hospital, Rangoon, has taken over the duties of Civil Surgeon, Rangoon East, vice Maj. S. H. Middleton West, proceeding on leave. Maj. G. G. Jolly has been confirmed as Director of Public Health, Burma. Lt.-Col. F. V. V. Beit, Medical Superintendent, Geneva Hospital, has been appointed Superintendent, Burma Medical School, vice Lt.-Col. Fuller Good, Civil Surgeon, Rangoon West. Dr. D. N. Hazra, Civil Surgeon, Bogra, has been transferred to Bihram, vice Maj. J. J. A. Brached. Dr. S. N. Bhattacharjee, Civil Surgeon, Malda, succeeds Dr. D. N. Hazra at Bogra. Lt. E. F. Hottinger, Civil Surgeon, Mianwali, and Dr. G. McGuire, Civil Surgeon, Karnat, have been taken on cadre of Civil Surgeons in the Punjab. Maj. R. E. U. Newman officiates as Assistant Director of Hygiene and Pathology, Western Command. Col. F. H. G. Hutcheson, A.D.M.S., U.P. District, has been promoted Maj.-Gen.

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments are notified : Surg.-Comdrs. G. Carlisle to the *Champion* ; A. I. Sheldon to the *Excellent* ; and W. N. L. Cherry to the *Warspite*, addl., and as Fleet M.O. (from date of joining). Surg.-Lt. A. G. L. Brown to the *Defiance*.

W. T. Donovan, A. B. Stewart, and H. L. Duncan to be Surg.-Lts.

ROYAL ARMY MEDICAL CORPS.

Maj.-Gen. Sir M. H. G. Fell, late R.A.M.C., to be Lt.-Gen.

Maj.-Gen. J. R. McMunn, late R.A.M.C., retires on retd. pay.

Capt. A. R. F. Clarke retires, receiving a gratuity, and is granted the rank of Maj.

Temp. Capt. E. F. W. Buckell relinquishes his commn. on account of ill-health, and is granted the rank of Capt.

J. D. Borham to be temp. Lt.

ROYAL MILITIA OF THE ISLAND OF JERSEY.

Light Infantry.—Surg. Lt.-Col. P. B. Bentlif is placed on the Res. of Mila. Off., and is granted the hon. rank of Surg.-Col.

TERRITORIAL ARMY.

Lt.-Col. J. H. Hunter to be Bt. Col.

Maj. (Prov.) E. M. Douglas-Morris is confirmed in his rank.

Capt. H. J. D. Smythe to be Maj.

Capt. A. H. Macklin, late R.A.M.C., to be Lt. and relinquishes the rank of Capt.

Lt. E. G. R. Grant, late R. War. R., to be Lt.

Lt. W. T. B. Joss, late North'd Fusrs., to be Lt.

Supernumerary for Service with O.T.C.—Capt. H. S. Allen, late the King's R., to be Lt. supernumerary for service with Medical Unit, London Univ., O.T.C., and relinquishes the rank of Capt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Capt. R. J. McN. Love, from Active List (supernumerary for service with Medical Unit, London University O.T.C.), to be Capt.

Lt. E. A. Sparks, from Active List, to be Lt.

WEST AFRICAN MEDICAL STAFF.

Dr. J. Y. Wood is promoted a Senior Medical Officer in Sierra Leone in succession to Dr. J. C. Murphy, retired ; Dr. F. Ross, a Senior Medical Officer in Nigeria, in succession to Dr. C. W. McLeay, retired ; and Dr. L. H. Booth, a Senior Medical Officer in Sierra Leone, in the place of Dr. A. M. Dowdall, who has been transferred to the Gold Coast in succession to Dr. G. J. Keigwin, retired.

THE LATE SIR JOHN SHERBURN.—After a somewhat prolonged illness Sir John Sherburn, who had retired from active practice, died at his home, Brantingham Thorpe, Brough, East Yorkshire, on July 7th. Born in 1851, the son of the late Mr. John Sherburn, of Howden, he studied at the University of Edinburgh, where he graduated in medicine in 1875. He became house surgeon and pathologist to the Hull Royal Infirmary, and then took up practice in Hull. For a long time he was consulting surgeon to the Hull Royal Infirmary and he was intimately concerned with the foundation of the Hull Victoria Hospital for Sick Children. He was sheriff of the city in 1886–7, entered the town council in 1887, and served two years as mayor, from 1888 to 1890. He was appointed a J.P. for Hull in 1889, and later for the County of the East Riding of Yorkshire ; he was also Lieut.-Colonel of the Northumbrian Brigade, R.F.A., and a representative member for the East Riding on the Territorial Force Association. Sir John Sherburn several times attempted to enter Parliament in the Conservative interest, but he was never successful. He was a partner in a large shipping firm at Hull and a vice-chairman of the Shipping Committee of Hull Chamber of Commerce. He was knighted in 1902. In 1884 he married Louise Ainley, youngest daughter of the late William Bailey, J.P., of Winstead Hall, Holderness. Lady Sherburn survives him, with two sons and three daughters.

THE LANCET.

LONDON: SATURDAY, JULY 17, 1926.

PNEUMONIA CASES IN FEVER HOSPITALS.

PRACTITIONERS are sometimes heard to grumble that the notification of diseases other than exanthemata may be of statistical value, but brings them no help in dealing with actual cases. It is an old grievance, and every effort towards its removal gives an impetus to the slow growth of confidence in the administrators of public health, whose incessant demands for the filling up of forms involve labour which often seems to be unproductive. The arrangements chronicled in the annual report[1] for 1925 of the Scottish Board of Health, whereby additional beds for cases of pneumonia are provided in city or county hospitals, will bring welcome relief to the doctor as well as to the patient's family. The reasons for selecting pneumonia for special consideration are set out in the report. The Board points out that far more public interest is devoted to tuberculosis, which accounts for some 4000 deaths in Scotland every year, than to pneumonia, though this disease claims an annual toll of 6000 to 7000 cases apart from those following measles or whooping-cough which are classified under the primary causes. From these figures we cannot estimate the number of patients who suffer and recover from pneumonia in any year, since forms of the disease other than acute primary and acute influenzal pneumonia are not notifiable. However, MURRAY LESLIE and J. BROWNING ALEXANDER,[2] from a study of the literature, conclude that while wide variations exist, the average case death-rate from pneumonia at all ages is about 20 per cent.; on this basis there must be in Scotland at least 30,000 cases every year of some form of inflammation of the lungs—a condition which requires watchful care and expert nursing whatever the causative organism. Moreover, though within the last 70 years the death-rate from most other diseases, including diseases of the respiratory system, has fallen, the death-rate from pneumonia in all its forms has increased greatly during this period. It may well be that a number of affections formerly regarded as tuberculous or bronchitic are now diagnosed as pneumonia, and that the total number is also swelled by the inclusion of pneumonias which are really only terminal conditions; but when these posibilities are discounted, there remains a larger number of cases than can possibly be admitted to existing voluntary or Poor-law hospitals. An obvious advantage of the scheme would seem to be the utilisation of empty beds during periods when infectious diseases proper are not prevalent. The desirability of using the infectious disease hospitals to supplement the accommodation in voluntary and Poor-law hospitals is recognised in the recent report of the Hospital Services (Scotland) Committee, though with anticipation that a big extension of the hospital work will fall on local authorities. It has already caused a heavy strain on the hospital accommodation of some localities. Glasgow, for instance, had 468 cases of pneumonia in its infectious diseases hospitals on Dec. 2nd, 1925, the local authority having definitely undertaken to remove to its hospital any pneumonia patient whose doctor recommends his removal. Aberdeen Burgh and Aberdeen County have given a similar undertaking, while several other local authorities are prepared to admit a varying number of cases of pneumonia to their fever hospitals. Details of some of the schemes adopted for the institutional and nursing services for pneumonia patients are appended. Of these the most informative is that of the Aberdeen Town Council, since the cases admitted to the City Hospital are divided into four groups and the death-rate is calculated separately. The total number of cases admitted to this hospital in the period 1919 to 1925 inclusive was 896, of which 221 were primary lobar, 117 primary broncho-pneumonia, 72 influenzal pneumonia, and 486 broncho-pneumonia secondary to measles and whooping-cough. The case death-rates per cent. were respectively 12, 38, 29, and 35. The figures are as yet too small to be anything but indicators, but the fact that lobar pneumonia has the smallest case death-rate is significant. The Aberdeen County Council are prepared to provide both a day and night nurse for grave cases treated at home if the patient is unable to bear the expense. Hospital treatment is, however, regarded as the ideal to be aimed at, and in view of the easy and comfortable methods of transport now available, it is deemed safe to remove to hospital a patient suffering from pneumonia—except in the presence of signs of cardiac embarrassment—up to and including the fourth day of illness. This clause would seem to refer to cases of lobar pneumonia where a crisis is to be anticipated, though this is not stated, and supplies an instance of the confusion in terminology referred to below. The total number of cases admitted to the Glasgow Corporation's fever hospitals in the same seven years was 12,517. The deaths among 5334 children under 5 years of age admitted with acute primary and influenzal pneumonia were 1404, representing a case death-rate of 26·3 per cent., while those among persons over five years—the large proportion of whom were young people—were 1323, a case death-rate of 18·4 per cent. These figures take no account of the large number of cases of secondary pneumonias to which are admitted to measles and whooping-cough wards. No comment is made in the report on the fact that the case death-rate of cases under institutional care is not appreciably less than the estimated average for all cases. The object of increasing largely the number of beds available for pneumonia patients is presumably not only to save life, but to reduce the period of convalescence and lessen the danger of relapses or sequelæ. If the scheme is also to serve a scientific purpose, it will be necessary to arrange for a uniform classification of the cases admitted, since the term pneumonia, as loosely used in the report, covers many widely different conditions. For the most part, the term appears to denote any sort of inflammation of the lungs, irrespective of the causative organism; elsewhere it seems to be used in a much more limited sense. For example, the paragraph on Methods of Treatment (p. 91) begins "A serum is now available for the treatment of about a third of all cases of pneumonia—viz., those due to the pneumococcus of Type 1." The last-named type certainly is not found in a third of "all cases of pneumonia," though it may account for a third of the cases of lobar pneumonia. The nomenclature of this complex subject appears urgently to need revision.

In drawing special attention to the measures taken to combat pneumonia in Scotland, we would not seem to imply that progress in the development of other public health measures is less noteworthy. All

[1] Seventh Annual Report of the Scottish Board of Health for 1925. Cmd. 2674. 1926. Edinburgh: H.M. Stationery Office. Pp. 326. 5*s.* 6*d.*

[2] Pneumonia. London: Heinemann. 1924.

sections of the report addressed by the Scottish Board of Health to its president, Sir JOHN GILMOUR, will repay study. The 20 pages allotted to venereal diseases provide a summary of the pathology, sociology, symptoms, and successful modern treatment of these diseases, which is more informative than many large text-books on the subject. The section on housing is less encouraging. Whatever opinion may be held as to the reasons for the failure to complete houses, it is regrettable to record that though 20,000 houses per annum are stated to be required, it has not been found possible to complete within a year 9808 houses which had actually been begun at the beginning of the year. Closely allied to the housing problem are the concerted scientific investigations on rickets being carried out in Glasgow and elsewhere. Significant conclusions drawn from a survey of data collected are: (1) that rickets, though showing some signs of decline, is still a very widespread disease; (2) that the methods of diagnosis of early rickets are steadily improving in technique; and (3) that, as the result of extended experimental and clinical investigation, the methods of arresting and curing rickets are sufficiently developed and definite to justify the hope that the disease will now steadily and rapidly disappear. No less energy is being shown in the attack on other problems of State medicine in Scotland, and the report gives promise that its successors will record changes and developments in many useful directions.

THE BRITISH EMPIRE CANCER CAMPAIGN.

THE Duke of YORK presided over the third annual general meeting of the British Empire Cancer Campaign on Monday, July 12th. The Campaign, he said, had been initiated to link up research institutions and workers in the Empire, and the annual report showed that the founder's aims were bearing fruit. He hoped that the *Cancer Review* (which we notice on p. 128) would be useful not only to workers in the great research centres throughout the world, but also to those in various branches of medicine who might wish to turn their attention to this line of study. No opportunity should be lost, he pointed out, of affording all possible help to those independent research workers who might only be able to devote part of their professional time thereto, thus enabling them to follow their own individual lines of research. The counties were now trying to take their full share by setting up their own centres or by county committees working in aid of the Central Fund, and he congratulated the Yorkshire Council on having already raised locally nearly £100,000, and on having taken steps to start the work of their research centre in connexion with the University of Leeds.

His Royal Highness in his address presented ably the main features of a full year's work of the Campaign, and the annual report, which was made public immediately after, gives the details of the various researches and activities which have been supported financially and otherwise by the movement. Among these may be mentioned maintenance grants to the Cancer Hospital, Middlesex Hospital, St. Mark's Hospital, and St. Bartholomew's Hospital, while to certain of these as well as to the London Association of the Medical Women's Federation radium is being allocated which was purchased by the Campaign with the assistance of the Medical Research Council. The résumés of the work at the various centres selected for support appear in the document, and will be read with interest as showing the numerous and differing angles from which the various problems are being attacked. Here lies the real hope; for those who are best able to endorse the optimism of the Minister of Health in respect of an approaching control of cancer are those to whom experience in scientific investigation has shown that no one solution of a particular difficulty is likely to effect much by itself, although its influence over other inquiries may be of superlative value. At any time in the wide range of experiment now engaged upon an inference may turn itself into an indication, and an indication into a revelation, for which reason it is justifiable to be sanguine, even while it is very necessary to be on our guard against premature conclusions.

A paper by Dr. THOMAS LUMSDEN published this week in THE LANCET is an excellent example of the kind of large yet intensive research which the Campaign is prepared to support. Dr. LUMSDEN's work at the Lister Institute has been subsidised in an open-handed manner by the Campaign, and we believe that those who study his paper sufficiently closely to be able to follow the conclusions will agree that these are of real moment. The hope of the discovery of an efficient antiserum against sarcoma, which can be employed in the human subject with safety, may seem too good to be true, but imagination has made freer excursions with less support and without disappointment.

PYORRHŒA AND THE MECHANISM OF TOOTH ERUPTION.

THE mechanism of normal tooth eruption, though apparently simple, is not yet understood. Of the many theories put forward to explain the process none is completely satisfactory. Recent work by an Austrian observer, Dr. B. GOTTLIEB, summarised in the *British Dental Journal* of May 1st by Mr. A. T. PITTS, is of interest not only because Dr. GOTTLIEB's views are original, but also because he founds on these views an entirely new conception of the nature of the pathological changes occurring in pyorrhœa. In order to understand his argument it is necessary briefly to recall what is generally accepted as the sequence of events in the eruption of a tooth. Previous to eruption the developing tooth is surrounded by a fibrous capsule known as the dental follicle. It has been shown by HERTWIG, VON BRUNN, and others that this follicle contains an abundance of epithelial cells derived by buddings off from the enamel organ, which form a more or less complete investment round the tooth known as the sheath of Hertwig. The dental follicle is in contact with the enamel of the crown but not adherent to it, except that at some stage previous to eruption the epithelial cells go to form part of that transparent pellicle external to the enamel which is called Nasmyth's membrane. In the root part of the tooth the dental follicle is adherent to the cement covering the dentine of the root and in this situation is called the periodontal membrane or periosteum of the tooth. Just about the time of eruption, though exactly when is not known, the epithelial cells in the coronal part of the follicle become detached from the follicle and blend with the epithelial remains of the enamel organ to form Nasmyth's membrane. When a tooth commences to erupt it has usually been supposed that the cleavage of these cells has already extended as far as the neck of the tooth, so that there is a space extending to the neck where the periodontal membrane commences. It has further been supposed that either by an advancement of the tooth through the bone or by an absorption of the gum, or both combined, this deep space or trough round the crown undergoes a progressive shrinkage until when the tooth has completed eruption there is a narrow collar of gum surrounding the neck of the tooth. This collar is lined with epithelium which at its base blends with

the periodontal membrane and may even be continuous with Nasmyth's membrane on the enamel. So far GOTTLIEB seems to agree with the current views, but the post-eruptive changes as described by him introduce an entirely new conception. GOTTLIEB believes that when a tooth erupts, the base of the gingival trough, as the space round the tooth is termed, is not situated at the junction of enamel and cement, but is attached to the enamel at some distance from the neck, and that even when a tooth has completely erupted in a clinical sense the actual base of the gingival trough is still above the level of the enamel-cement junction. The process of eruption according to GOTTLIEB involves a gradual separation of the epithelium from the enamel so that the base of the gingival trough progressively travels towards the root. Concurrently with this cleavage of epithelium there is a proliferation of epithelium towards the root. But even when clinical eruption is complete the process still goes on, for as the base of the gingival trough approaches the neck of the tooth the epithelium proliferates into the periodontal membrane and eventually the denudation of the tooth may not stop short at complete exposure of the crown as commonly supposed, but may even go on until a portion of the root may become visible as part of a purely physiological process. This final stage of eruption does not go on indefinitely, though GOTTLIEB does not indicate the stage when eruption is complete. Concurrently with these progressive changes in the soft tissues at the neck of the tooth there is also a progressive absorption of the level of the alveolar margins which keeps pace with the detachment of epithelium from the enamel. According to GOTTLIEB this alveolar absorption occurs early, even before there is any down growth of epithelium into the periodontal membrane. Thus, to summarise, eruption as GOTTLIEB understands it comprises a threefold process: (*a*) detachment of epithelium from the enamel; (*b*) absorption of the alveolar border; and (*c*) proliferation of epithelium at the base of the gingival trough towards and eventually into the periodontal membrane. These processes should occur harmoniously and represent a physiological process without any pathological significance. This point of view would imply that eruption is a much lengthier process than previous observers have imagined, continuing, indeed, long after a tooth has advanced into occlusion with its antagonist. Moreover, under GOTTLIEB'S hypothesis, the denudation of the gum from the root of the tooth instead of being a pathological process, as it is generally assumed to be, would be the final stage of normal eruption. It would be easy to criticise this theory, but there are certain facts which support it, and it cannot be lightly put on one side, especially since it seems to help us to elucidate the pathology of pyorrhœa.

GOTTLIEB recognises three forms of pyorrhœa: Dirt pyorrhœa, paradental pyorrhœa, and alveolar atrophy. In the first two the changes are essentially those occurring in eruption, but they occur in a disorderly fashion instead of harmoniously. In dirt pyorrhœa the initial factor is some local irritant such as food stagnation, faulty fillings or crowns, and crowding of teeth. This stagnation leads to inflammatory changes in the gum. In normal eruption the gum shrinks as the epithelium grows along the root, and the gingival trough is preserved at a stable depth. In dirt pyorrhœa the inflammation prevents this shrinkage and leads to hypertrophy. The gingival trough thus becomes abnormally deep, in fact becomes a pocket. The inflammation may cause a rapid proliferation of epithelium towards the root. At first the epithelial lining of the pocket may be intact, but it soon becomes destroyed, in part or wholly, by ulceration, and a pus pocket results. The spreading inflammation then destroys the fibres of the periodontal membrane, which is thus stripped from the cement of the root. In paradental pyorrhœa the chief factor seems to be an uneven shifting of the base of the gingival trough, the proliferation of epithelium being asymmetrical. The normal defensive power of the trough in resisting infection is weakened and inflammation results, tartar and food being deposited with resulting bacterial stagnation. The ætiology of paradental pyorrhœa is still obscure, for it may occur in healthy mouths and without any apparent stagnation.

Two forms of bone destruction are described by Dr. GOTTLIEB—marginal atrophy and diffuse atrophy. The former is part of the mechanism of normal eruption and becomes pathological only when it does not occur evenly round the circumference of the tooth. This is comparable to the uneven detachment of epithelium in paradental pyorrhœa. Marginal atrophy occurs chiefly in dirt pyorrhœa and is caused by the same factors of local irritation as lead to the deepening of the pocket in that condition. Diffuse alveolar atrophy is an entirely different condition. It occurs in a lateral plane leading to widening of the periodontal space, whereas marginal atrophy occurs in a vertical plane. Diffuse atrophy may affect any part of the alveolar bone and may occur without any lesion of the gingival margins. This is an important distinction, for GOTTLIEB believes that it may occur as a primary lesion and not as an extension of marginal infection. Since the stability of a tooth depends on the bone being intact, it follows that a destruction of bone laterally in any part of the socket must lead to loosening of the tooth. The diagnosis of the condition depends on a recognition of this fact. If a pocket is shallow compared to the degree of loosening, then the condition is primarily one of diffuse alveolar atrophy. If the pocket is deep, then the loosening is due to vertical destruction of bone—i.e., to dirt pyorrhœa. Diffuse alveolar atrophy is often, though not invariably, associated with paradental pyorrhœa, though Dr. GOTTLIEB does not consider that they have a common ætiology. Those who are interested in his views will find them well set out in a monograph published by him in Vienna last year.[1] GOTTLIEB does not discuss in this book the morbid histology of diffuse atrophy, but it is evident that the primary change must be in the periodontal membrane and that the condition must be essentially one of bone absorption and its replacement by fibrous tissue. H. K. BOX,[2] who describes a similar condition in his valuable studies on periodontal infections, has given an elaborate account of the morbid anatomy of what is apparently the same condition. The name given by him to the condition is rarefying pericementitis fibrosa. It is a process of bone absorption both by halisteresis and lacunar absorption, and replacement of the bone absorbed by a low grade of fibrous tissue. Like GOTTLIEB, BOX lays stress on the fact that it may occur as a primary lesion and that it leads to loosening of the teeth. There are further parallels between the work of the two observers. Both describe the down-growth of epithelium into the pockets. BOX, however, regards it as a concomitant of the infective process and essentially an attempt to repair the ulcerative process. GOTTLIEB looks upon it as a part of the normal mechanism of eruption, though in pyorrhœa as a result of a morbid stimulus the epithelial proliferation may be excessive and aid in the formation of a pocket. BOX studies the appearances from the standpoint of morbid histology, while GOTTLIEB is more concerned with the mechanism of the pathological processes. Though they differ in their interpretation of the significance of the changes, the fact that each has independently observed and described the condition is significant. It may be hoped that their researches will stimulate other workers to study the eruptive process, for on the confirmation of GOTTLIEB'S heterodox views on eruption the validity of his conception of the pathology of pyorrhœa must depend.

[1] Schmutzpyorrhœ, Paradentalpyorrhœ und Alveolaratrophie. By Dr. B. Gottlieb, Privatdozent für Zahnheilkunde, University of Vienna. Urban und Schwarzenberg, Vienna. 1925. Op. 85. 6 marks.

[2] Studies in Periodontal Pathology. Canadian Dental Research Foundation, Toronto. 1924.

Annotations.

"Ne quid nimis."

MEDICAL EDUCATION IN EGYPT.

THE political situation in Cairo is at present attracting general attention. The outcome may well prove to be of great importance in regard to medical education in Egypt. It will be within the knowledge of many of our readers that there was at the Kasr-el-Ainy Hospital a flourishing school of medicine chiefly under British guidance with many Egyptian medical men on the staff as physicians, surgeons, specialists, and teachers. This school was recognised by the Conjoint Board in this country until about a year ago. During the last two years many changes have occurred. The English staff and teachers have for the most part been retired or replaced, though at the present time there is an English acting director or dean of the Faculty, who has been associated with the school for many years as professor of surgery and surgeon to the hospital. The Minister of Education in the Ministry which has recently resigned has invited Sir Cooper Perry, who is just retiring from the post of principal officer of the University of London, to go out to Egypt in October to reorganise the medical school as a faculty of the new University of Cairo. Sir Cooper Perry, by his long experience of university matters, notably as Vice-Chancellor and principal officer of the University of London, is well qualified for this work, and he has, moreover, the great advantage of previous experience of the Egyptian Medical School, as it was on his report that the Kasr-el-Ainy School was so successfully organised nearly 30 years ago. We are also informed that it is proposed to appoint Englishmen to certain important professorial posts on the new Faculty of Medicine. We welcome the news that the reorganisation of the School of Medicine is to be taken seriously in hand, and we feel sure that Sir Cooper Perry is the right man to do this in a statesmanlike manner with due regard to the special problems of Egyptian medical education. Prof. F. C. Madden, who is acting as dean of the Faculty of Medicine until Sir Cooper Perry's report is complete, has already made some changes tending to place the work in the school on a more satisfactory basis. We have on more than one occasion pointed out in THE LANCET the great opportunities which Cairo offers for medical education and research, and we have been glad to publish some of the original papers from the workers there, both European and Egyptian. We are convinced that under wise guidance and with genuine national support the Cairo Medical School can become the most important medical centre in the Near East. The present developments give grounds for hoping that the Egyptian Government recognises these facts. The experience of the last two years has demonstrated how rapidly a well-organised and effective institution can deteriorate when popular clamour sways the authorities and when ill-advised partisan interference is permitted. We venture to hope that Sir Cooper Perry will evolve a means of establishing a genuine faculty of medicine and that the Cairo School will again become efficient even more rapidly then it has deteriorated.

THE CHANGES IN THE BLOOD IN CONVULSIVE STATES.

INTERESTING observations on the changes in the blood in convulsive states are recorded in the number of the *Bulletin of the Johns Hopkins Hospital* for June, 1926. O. Wuth, using as his subjects epileptic patients, observed very definite changes in the blood following upon convulsions, these changes taking the form of a polymorphonucleosis and an increase in non-protein nitrogen, uric acid, and creatinine. These changes were pronounced in all the cases observed, and in less careful hands might have led to the construction of an elaborate theory as to the causation of epilepsy or at least of epileptic convulsions Fortunately the author was not content to let the matter rest at this stage but controlled his results with observations on a series of cases of traumatic epilepsy, cerebral syphilis, and general paresis, in all of which violent convulsions were occurring. In all cases exactly the same changes were found in the blood as in the cases of true epilepsy. The author concludes that the changes found are the result of the violent muscular exertion during the convulsive seizures and have no relationship to the causation of the convulsions.

In the same number of the *Bulletin*, Stander and Radlett describe the changes found in the blood of eclamptic patients after convulsive seizures. These authors find the outstanding changes to be an increase in the non-protein nitrogen and uric acid as noted by Wuth in his epileptic cases, and also a decrease in the CO_2 combining power of the blood, a hyperglycæmia, and a great increase in the lactic acid. The increase in the uric acid they are inclined to regard as a result of the liver damage which is so marked a feature of the eclamptic condition; in view of the fact that a similar change was found by Wuth in his cases of convulsions from various causes, it seems likely, however, that this increase is the result only of the convulsive movements, and is not specific to the eclamptic condition. Three possibilities are suggested as to the cause of the striking increase of the blood lactic acid in eclampsia: (1) an abnormally great amount of carbohydrate metabolised; (2) a disturbance or slowing down of the "lactic acid to glycogen" step in carbohydrate metabolism; and (3) lactic acid production from sources other than carbohydrate. It was found that the administration of insulin caused a rapid reduction of the lactic acid to normal but left the uric acid level unaffected. This might seem to point to the second suggestion as offering the correct solution. Unfortunately no observations on this point were included in the work of Wuth. In view, however, of the fact that lactic acid is excreted in considerable amount during exercise it would seem possible that the increase of the blood lactic acid during eclamptic convulsions may also be due to the violent activity of the musculature and in no way specific to the condition.

THE TRIGEMINAL NERVE IN OPHTHALMOLOGY.

IN an article on the trigeminal nerve, which appears in the June issue of the *British Journal of Ophthalmology*, Mr. Leslie Paton gives a useful résumé of our present knowledge. In a sense the fifth nerve is involved in all ocular lesions, for its distribution and central connexions afford explanations of ocular pain, ocular headaches, and various ocular reflex phenomena. There is, however, a more intimate association between lesions which involve the nerves of the eyeball and certain affections of the cornea. Of this association the simplest example is the recurrent erosion of the cornea which occurs as a result of an abrasion causing injury to the superficial plexus of nerve fibrils. Other examples are discussed by Mr. Paton and include herpes of the cornea, herpes zoster ophthalmicus, and neuroparalytic keratitis. The first—simple herpes—is associated with an ultra-microscopic filter-passing virus whose transmissibility has recently been demonstrated by W. Grüter, and which is also found in connexion with labial and facial herpes. Infection of the rabbit's cornea with this virus may lead to an infection of the central nervous system similar in its nature to encephalitis lethargica, and it has been shown that when this happens the infection travels to the bulbo-spinal root either along the axis cylinders of the fifth nerve or along the perineural lymph spaces. In the eyes the most usual manifestation of herpes corneæ is a dendritic ulcer, but similar ulcers may be produced in the absence of herpes virus by the action of other toxins. The slowness of healing and the tendency to recurrence which make dendritic ulcers so troublesome depend on the extent of the neural involvement. Herpes

simplex follows various infections of different kinds which produce a lowering of general tissue resistance. Herpes zoster ophthalmicus is a totally distinct disease and is strictly analogous to ordinary shingles. It follows the distribution of the affected nerve and arises independently of any preceding disease, though there is always a preceding neuralgia. Some or all of the branches of the first division of the fifth may be affected. In just over 50 per cent. of the cases the globe is involved and in the majority of these it is the cornea which is attacked. As the naso-ciliary branch is distributed both to the globe and to the side and tip of the nose, the involvement of the latter is an important guide to prognosis. The most frequent primary manifestation in the cornea takes the form of small round-celled infiltrations in the substantia propria; vesicles, secondary infection, iritis, and even optic neuritis may occur later. The primary lesion always occurs in the Gasserian ganglion just as the primary lesion in ordinary herpes zoster occurs in the posterior root ganglion. Herpes zoster may occur in an epidemic form, and it has been shown that it then has a close relation to chicken-pox.

There remains to be discussed neuropathic keratitis. This is a condition in which marked degenerative changes are found in the cornea as the result of lesions affecting the fifth nerve, apparently in any part of its course. In Mr. Paton's experience the lesion is common after operations on the Gasserian ganglion for the relief of trigeminal neuralgia—either extirpation or the injection of alcohol; but it may arise from lesions of the nerve either above or below the ganglion. The cause of the condition has not been satisfactorily determined. Some theories lay the main stress on the nervous factor in causation, either by means of a trophic influence or by means of vaso-motor fibres. Others attribute the corneal lesions to trauma due to diminished sensibility. Clinically there is good evidence of a combination of these causes being responsible. It is a remarkable fact that to prevent these lesions or cure them in their initial stage it is only necessary to unite the two lids by a temporary suture, and this seems to show that trauma is really the main factor. It is not necessary, however, that the whole cornea should be covered; a small lid adhesion as far as the outer side of the cornea appears to be sufficient. This is a very curious fact, and Mr. Paton does not offer any explanation of it. Trauma can hardly be the sole factor at work, for in rare cases the first manifestation of the herpes is not keratitis but iritis. Some observers have attributed the condition to dislocation of the vaso-motor mechanism, others to drying of the cornea owing to loss of sensibility; others again, to bacterial infection. Mr. Paton considers all these theories unsatisfactory, and suggests that the problem requires further investigation. Useful information, he believes, might be gained by careful research, and to any such work his summary is certainly an excellent introduction.

STUDIES IN ARTIFICIALLY INDUCED MALARIA.

MALARIA is to-day the treatment of choice for general paralysis of the insane. It is also being increasingly used for tabes dorsalis and for disseminated sclerosis. If it has blessed those receiving it, it has blessed also those giving it, for critical observation of this artificially induced disease has made important additions to our knowledge of malaria. Clayton Lane[1] gives a critical summary of this new knowledge of malaria gained from its therapeutic use.

Infection may be produced by (1) subcutaneous, intramuscular, or intravenous injection of blood containing malaria parasites, generally *Plasmodium vivax*, the infection being received as trophozoites; or (2) in the natural manner by the "bites" of mosquitoes, usually *Anopheles maculipennis*, which have been infected deliberately by feeding on malaria cases with gametocytes in the cutaneous blood, the infection being received as sporozoites. These methods may be designated "injected" and "natural," respectively. They are sufficiently distinct to necessitate caution in transferring to the one inductions made upon the other. In "injected" infections disinfestation is extraordinarily easy; 3 to 10 g. quinine has brought about cure. After "natural" infections relapse much more frequently follows the same dosage of quinine. Clearly infections acquired as trophozoites react to quinine differently from those received as sporozoites. In spite of the much higher probability of malarial relapse the friends of the patient sometimes prefer the sporozoites—they do not like the idea of injection of insane and syphilitic or unknown blood; and this being so the doctor is safer from later charges if he give sporozoites and not trophozoites. The incubation period of "injected" cases has varied from 5 to 35 days, and has differed with the tissue site of infection: 4 to 8 days intravenous, 6 to 35 days subcutaneous, 10 to 16 days scarification with application of the blood. Two patients inoculated at the same time with the same quantity of the same blood may have quite different incubation periods, and it is wise to inform the patient's friends of this variability. Mühlens has insisted on daily examination of the blood to ascertain that a new strain of *P. vivax* is pure. Deaths have occurred from unsuspected contamination with *P. falciparum*. Yorke and Macfie record that when deliberately using *P. falciparum*, and making daily blood examinations by way of apparently adequate safeguard, deaths have occurred from fulminating cerebral malaria. Once a pure strain of *P. vivax* has been established it has been maintained for years, whether transmitted by "injection" or "naturally"; and has throughout retained the morphological characters of *P. vivax*, irrespective of season. The "unicity" theory has broken down completely at the first experimental test. Many observers have proved that gametocytes may eventually form even after many passages in which they have not been observed in injected cases. There is no justification for the conclusion held by some that "injected" cases are no risk to anyone. Again, the same strain of *P. vivax*, passed on by injection, may produce different reactions in different hosts. It may seem to require refreshing, or become very virulent for a time. The mortality emphasises the need not only for daily observation of the blood, but for critical clinical regard for the patient as well. It has been pointed out above that the results of quinine treatment of "injected" cases are better than those of mosquito-infected cases; yet even these last are an enormous improvement on those obtained during the Great War, in the same hands, in established cases; and they indicate the vital importance of immediate and adequate treatment of all early malarial infections. As a prophylactic Yorke and Macfie noted that 10 gr. of quinine taken daily for five days before and seven days after infective mosquito bites failed to prevent infection. This could be ensured only by continuing this quantity of quinine for ten days after the infecting bites. Against the sporozoites, then, quinine is ineffective and of little or no prophylactic worth unless taken in curative doses, a conclusion which confirms Hanschell's African observations. Quinine does not act directly on the plasmodia, for blood containing parasites and quin. hydrochlor. 1 in 10,000, for 12 hours, or 1 in 5000 for five hours, may yet infect by injection. Quinine given to a donor does not render his blood malarially harmless to the recipient. Malarial parasites are not destroyed when incubated at body temperature with blood containing quinine in far greater strength than can be found in vivo. Yorke and Macfie conclude that quinine destroys, probably indirectly, large numbers, but not all, of the parasites, thus setting free a quantity of soluble antigen to provoke formation of immune body, which destroys yet more parasites. A. Pijper and B. Russell report from South Africa that after injection of benign tertian malaria the red blood corpuscles increase by 10 to 30 per cent. before fever appears, and that fever can be cut out by

[1] Tropical Diseases Bulletin, May, 1926, vol. xxiii., No. 5.

neosalvarsan injections. It may be added that benign tertian infections by "injection" or by mosquito bite do not at first show the tertian intermittent fever seen in established cases. The fever at first is irregularly remittent, even typhoid-like; and when, later, the intermittent form appears, it is quotidian. This temperature course was demonstrated by the historic case infected by Manson in 1900, in London, by mosquitoes brought from Rome home, but though the case was always remembered its temperature chart was forgotten.

These are only a few of the many important observations to which the study of malaria as a therapeutic agent has led. It will be some time before they can be woven together into a comprehensive whole, but meanwhile much light has been thrown on various aspects of the problem. From the epidemiological standpoint the recent communication of Colonel S. P. James to the Royal Society of Tropical Medicine and Hygiene, which was reported in THE LANCET of June 26th, may be of great practical importance. The results of his recent researches are set out at greater length in a report [1] published by the League of Nations. He has found a close correlation between his field observations of *A. maculipennis* and European malaria and the facts disclosed by his laboratory breeding and malaria infecting of this mosquito for therapeutic use in G.P.I. The one showed these mosquitoes haunting and breeding in and about the houses of malaria subjects—a house infection with malaria; the other that *A. maculipennis* needs a definitely sheltered existence to acquire and maintain infestation with malaria. This presages a shift of anti-malarial effort from the swamp to the household, and will need an organisation of tactful health visitors in tropical lands even more specialised than those who carry out such work at home, if it is to be successful.

TEACHING AND LEARNING.

THE foreword to the Report of the Scientific Work of the Surgical Staff of the Women's Hospital in the State of New York for the year 1923–24,[2] states that the surgical staff are expected to utilise every available opportunity in the hospital by engaging in clinical research and making studies from their records, and the present volume, which consists of 27 monographs by the staff and seven theses by the senior students of Cornell University Medical College, is one of which any hospital might be proud. Every article in the volume is the result of observation or research. The cases are analysed in elaborate tables and the operative methods employed are excellently illustrated; both tables and illustrations speak of an organisation and of financial resources entirely inaccessible to the English surgeon. But to our mind the remarkable portion of the volume is the latter half, containing theses contributed by undergraduate fourth-year students as part of their work in the department of gynæcology for their degree at Cornell. Students taking the elective course in gynæcology are given problems as part of their work. Two students are assigned to a problem and they work up the data together, but each submits a separate thesis. There are here published seven of these theses. They reach a really high order of merit showing close observation and thoughtful analysis of the clinical facts that have been recorded. To have carried out one such piece of work is a thing of which any medical student might well be proud, and its effect upon the mind of the student can scarcely be exaggerated. These theses are on such practical points as post-operative leucocytosis, the end-results of carcinoma of the ovary, the incidence of carcinoma of the cervix following supravaginal hysterectomy, the effect of ether anæsthesia on the isoagglutinins of the blood, the results of blood transfusion, the treatment of incomplete abortion and pyelitis as a post-operative complication.

Of course no student could produce such theses without a great deal of assistance, but a study of each article shows at once that it has been so arranged that the actual work could be carried out by the students themselves. Here we have a method of teaching to which the reformers of medical education in this country might well have their attention directed. The scheduled life to which for years our senior students are condemned in an overcrowded curriculum compels them to keep closely to the beaten track if they are to satisfy the examiners. Facts must be learnt, but ephemeral theories need not be crammed; a plan which would allow the student, if only for a short space, to breathe the air of research, to observe facts for himself without anticipation of an examination to be faced, calls for serious attention. And there is the chance that the properly guided student might produce something useful for the world, while working with infinite value to his own mental development. Our education authorities have laid much emphasis in the past on the verb "to teach." This volume should serve to remind us of the importance of the verb "to learn."

ETHYLENE ANÆSTHESIA AND CARBON MONOXIDE POISONING.

THREE cases, two of which were fatal, of collapse after inhalation of ethylene are reported in the *Journal of the American Medical Association* (June 5th), and in two of the patients carbon monoxide was proved to be present in the blood to the extent of 50 and 60 per cent. saturation. This report appears to be an important contribution to the literature of ethylene, and marks the desirability of a rigid test of the contents before cylinders of ethylene are put into use. The manufacture of this agent for anæsthetic purposes has been on the increase in this country, where, until recently, the only ethylene available for anæsthetists came across the Atlantic, and we do not doubt that the lesson of these cases reported from Pittsburgh will be given due attention. In all these three instances, in one of which the period of anæsthesia was 50 minutes, the signs of collapse did not appear till the operation was almost completed. Forced inhalations of oxygen with 10 per cent. carbon dioxide were the chief remedial measures employed. Besides the cylinders used for the patients referred to above, two other fresh cylinders of ethylene were examined for carbon monoxide with positive results. It is satisfactory to note that the problem is being further investigated in collaboration with the United States Bureau of Mines at Pittsburgh.

SURGICAL TREATMENT OF BRONCHIECTASIS.

ESTABLISHED bronchiectasis is so intractable that recourse to heroic measures may well be justifiable. Modern thoracic surgery provides several alternatives. The success of treatment largely depends on early diagnosis, and as Brauer[1] has pointed out in discussing the advantages of artificial collapse of the lung, the condition presents many different clinical and anatomical pictures. It starts, perhaps, with a simple bronchitis and broncho-pneumonia, and goes on with remissions for many years before developing the classical symptoms of the advanced disease. Initial stages are frequently overlooked and the diagnosis may not be made until the case requires energetic treatment. A persistent localised catarrh should always be suspect. When bronchiectasis is diagnosed in the earlier stages it is difficult to decide how soon active intervention should be attempted. Brauer considers it indicated if there is copious offensive expectoration, extension of the trouble, a predisposition to hæmorrhages or recurrent broncho-pneumonia, or an irritating and painful cough. If

[1] Report on the First Results of Laboratory Work on Malaria in England. By S. P. James, M.D., Lieut.-Colonel, I.M.S. (ret.), Assisted by P. G. Shute, Laboratory Assistant, Ministry of Health. Publications of the League of Nations. III. Health. Geneva. 1926.

[2] Vol. v., pp. 293.

[1] Bull. et Mém. de la Soc. Méd. des Hôp. de Bucarest. January, 1926.

intervention is decided on there are three possible procedures—collapse of the lung, pneumotomy, or resection of a lobe or lung. Brauer favours the first of these on the ground that it is the least dangerous; but it must be done in time if it is to be efficacious. The object of all treatment must be to prevent stagnation of the secretions, which occurs in the saccular dilatations along the bronchi; the bronchi between the saccules are relatively, if not actually, stenosed. The lung tissue adjacent to the bronchitis is involved by an interstitial peribronchitis, and the resulting fibrosis and dilated bronchi do not yield readily to collapse, though improvement does occur from the immobilisation associated with it. When the pathological changes are advanced, therefore, collapse by thoracoplasty is insufficient unless such collapse is very nearly complete. Artificial pneumothorax is an alternative, but it is generally impossible to secure in adults owing to the formation of adhesions. If practicable, it may be effective; but it has to be maintained. Thoracoplasty should be extensive and should be done by the subscapular-paravertebral technique; it has the advantage of maintaining a permanent collapse. Phrenicotomy is useful in slight cases, but as a general rule it has to be combined with other methods.

PUBLIC HEALTH AND MEDICAL PROFESSION IN OVERSEA LEGISLATION.

THE latest volume of the *Journal of Comparative Legislation* contains summaries of the laws passed during 1924 in the British Isles and the Dominions overseas. From this bird's-eye view it is possible to see what progress has been made lately by British legislatures in matters affecting public health and the medical profession. Southern Rhodesia took advantage of its new status as a colony to pass a comprehensive Public Health Act largely based upon the law of the Union of South Africa. The Act declares the functions of the Public Health Department to be to guard against the introduction of disease into the colony, to prevent, limit, and suppress infectious and contagious diseases, to advise and assist local authorities, to promote and carry on research, to prepare and publish reports, statistics, and other information, and generally to promote public health. The Minister obtains wide powers of making regulations and is given the assistance of an advisory board. Quebec and Saskatchewan have also passed public health measures, the central authority in the latter province being empowered to prohibit, for such period as is deemed advisable, the holding of public meetings or gatherings in case of an epidemic, or threatened epidemic, and upon request of the local board of health or medical officer. Manitoba has passed an amending Act which repeals the requirement that small-pox cases be removed to isolation hospitals; other sections deal with fumigation, the entering of sick-rooms with the permission of the health officer, the duty of occupants of "placarded houses," permits to go about one's usual vocation, and the cleaning of rooms and clothing after cases of communicable disease have occurred. Alberta has re-christened its Insanity Act, which in future will be called the Mental Diseases Act, and has changed its "asylums" into "hospitals." The superintendent is authorised (*a*) to admit to hospital and detain for examination and treatment such person as he may deem proper; (*b*) to order a patient's removal from one hospital to another; (*c*) to discharge a patient who no longer needs treatment; and (*d*) to release patients upon probation if satisfied that the patient will during the necessary period be properly looked after by relatives and friends. Any resident in Alberta who needs, or is believed to need, treatment for mental diseases may be admitted to hospital (*a*) by voluntary submission to treatment, (*b*) by medical certificate, or (*c*) by warrant of the Attorney-General. Anyone who believes himself to need treatment may voluntarily apply for admission and may be received and detained. There is machinery by which two legally qualified medical practitioners may certify that they have specially examined a named patient and that he should be confined in a hospital; on these certificates being submitted to, and approved by, the superintendent, the patient may be removed to hospital without any further or other authority. Drug addicts are to be deemed persons in need of treatment such as is provided in a hospital, and the provisions of the Act relating to insane persons are made applicable to addicts. Bermuda has authorised the appointment of a director of the medical and health department at a salary of £1000 plus travelling expenses from and to the United Kingdom.

Amongst enactments relating to medical practitioners a New Zealand Act contains important provisions. The original Act of 1914 gave the holders of certain "foreign" diplomas an absolute right to registration, subject to certain conditions as to reciprocity. In future the registering authority may require the holder of a "foreign" diploma to pass an examination in medicine and surgery prescribed by the University of New Zealand; this condition may apply even if the applicant is registered in the United Kingdom, provided that his registration in the United Kingdom is by virtue of such "foreign" diploma. The new Act also provides for removing names from the register of New Zealand where persons have been registered there on the strength of outside qualifications, and where they have been removed from the registers of their original countries on grounds of misconduct. There is a right of appeal to the Supreme Court against such removal. The Medical Council of New Zealand, which is the registering authority, is given new disciplinary powers in cases of "grave impropriety" or "infamous conduct in a professional respect." If the conduct is not regarded as so grave as to render removal from the register necessary in the public interest, the Council may impose fines or suspend from practice, but the suspending order is not to exceed a period of 12 months, nor can it be made without the consent of the Attorney-General. There is a right of appeal to the Supreme Court against all orders imposing penalties. Lastly, a medical practitioner who has been temporarily detained in a mental hospital must not resume practice without first obtaining a licence from the Medical Council. New Zealand has also passed a Masseurs' Registration Amendment Act containing an elaborate definition of "massage," definitely declaring that "chiropractors" are not entitled to be registered as masseurs. New South Wales has established a Board of Veterinary Surgeons; practice as a veterinary surgeon is to be restricted to persons registered under the law, and registration is to be confined to persons who satisfy the Board of their qualifications, good fame, and character. Under another Act there is to be a Nurses' Registration Board of New South Wales with powers to arrange and hold examinations, to register qualified nurses, issue certificates of registration, and remove or suspend from the register any nurse guilty of misconduct. The general provisions are not unlike the English, Scottish, and Irish enactments of 1919. Existing nurses, if they satisfy the Board as to their qualifications, may be registered. After 12 months from the commencement of the Act no one may assume the title of nurse unless registered, nor may any registered nurse act, except in cases of urgency, in any capacity in which she is not registered.

Other enactments in these summaries of overseas law-making (which the Society of Comparative Legislation annually publishes) deal with matters which have their bearing upon public health and their interest for the medical profession. The State of Victoria, for instance, has dealt with the diseases of animals and with traffic in carcasses, the Irish Free State with agricultural produce—eggs and butter, and Northern Ireland with the marketing of eggs; while New South Wales has passed a Plant Diseases Act to protect plants and fruit from diseases and

insect pests, with wide powers of declaring quarantine areas, inspecting infested districts, and destroying infected plants. These are but a fraction of the general wealth of information on all topics which a study of comparative legislation reveals. That study is particularly interesting when it shows, as in the case of the New Zealand legislation concerning medical practitioners discussed above, how far the laws of the home country, often attacked by critics, have been adopted and extended in progressive democracies elsewhere.

THE TRANSMISSION OF KALA-AZAR.

THE Indian Research Fund Association has published a memoir [1] which embodies the report of the Kala-azar Commission in India and contains numerous other papers, including those of the Kala-azar Ancillary Inquiry. The work done and the results achieved are so important that it is necessary to say something of the Commission's constitution. It was formed in 1924 and has worked in conjunction with the ancillary inquiry, which was staffed by the Calcutta School of Tropical Medicine; the object of the two bodies has been to make a general survey of kala-azar in India, more especially paying attention to the manner in which the disease is transmitted. The Commission consisted of Lieut.-Col. S. R. Christophers (director), Major H. E. Shortt, and Mr. P. J. Barraud, while the members of the ancillary inquiry were Major R. Knowles, Dr. L. E. Napier, and assistant-surgeon R. O. A. Smith. The conclusions at which the Commission arrived are now widely known, and the implication of the sandfly (*Phlebotomus argentipes*) as the transmitting agent are manifestly of far-reaching importance. It is obvious that the work has been done with great deliberation and that the conclusions are mature. The bed bug was given full consideration as a possible vector, but when carefully weighed in the scales of evidence it was found wanting, and so has been exonerated. In the same way, chiefly on the basis of work done by Mackie in Assam in 1915, the common louse has been excluded. The papers are prefaced by an excellent introduction by Colonel Christophers, in which he surveys previous investigation into the transmission of the disease, and whets the reader's appetite for the more detailed account in the report. The description of the geographical distribution of kala-azar is as interesting as it is instructive. One of the most striking finds of the ancillary inquiry is the fact that no less than 25 per cent. of sandflies fed on kala-azar patients became infected with leishmania flagellates, in spite of the fact that in the patient's peripheral blood stream the parasites are always apparently very scanty indeed. The infection manifests itself in the production of masses of leptomonas forms in the pharynx of the sandfly. The parasite of kala-azar should therefore be known as *Herpetomonas donovani*. The Commission found it difficult to recognise this sandfly as an efficient vector, for the reason that infected flies seem in the normal course to die after oviposition, within five days of their being infected: none the less, so strong is the evidence of implication that it is considered that "for the present . . . the sandfly must be held to be the probable transmitter." The written matter of the memoir, as we have indicated, is of great interest, and the numerous illustrations and diagrams which are scattered throughout the volume make it for all time a mine of information upon the anatomy and biology of phlebotomus in India. The work done by the inquiry Commission will have well repaid the Indian Government for its energy and enterprise, and it is indeed gratifying to announce that certain conclusions, the promise of which is carefully guarded, have been reached. The devoted band of workers concerned are to be cordially congratulated on the consummation of their labours.

[1] Indian Medical Research Memoirs, No. 4. Thacker Spink and Co., Calcutta. (Obtainable from W. Thacker and Co., 2, Creed-lane, London, E.C. 4). Pp. 288. R. 8.8 or 11s. 6d.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CLXXXI.

TREATMENT OF PERSISTENT HICCUP.

HICCUP is due to a spasmodic contraction of the diaphragm, causing an abrupt inspiration which is cut short by a sudden closure of the glottis.

Causation.

The causes of persistent hiccup are manifold. Nothing is more exhausting to the patient, or more capable of making life a misery, or dying a torment than persistent hiccuping; after operation no symptom is more difficult to allay, or more painful. A careful consideration of the source of the irritation will go far to promote successful treatment. Very commonly the centre of irritation causing the spasm is below the diaphragm.

Subdiaphragmatic Conditions.—Distension or overloading of the stomach is a common cause of troublesome hiccups. The effect of alcohol in its production is proverbial. Hiccup may occur in association with abscess of the liver irritating the under surface of the diaphragm; similarly new growth in this situation may also cause the symptom, which is also met with in cirrhosis of the liver. Peritonitis of the upper part of the peritoneal cavity, including subdiaphragmatic abscess, sometimes causes the spasm.

Pleural Conditions.—Irritation of the pleural surface of the diaphragm, such as is set up by diaphragmatic pleurisy, or an empyema, is often a cause. Occasionally hiccup is produced by infiltration of a new growth in this area, arising perhaps at the lower end of the œsophagus, or by metastasis from some other place.

Phrenic Irritation.—Direct irritation of the phrenic nerve as a cause is rare, but irritation may be set up indirectly by new growths of the mediastinum or enlarged glands at the root of the lung. Such lesions much more commonly cause paralysis of the phrenic nerve.

Central Causes.—Very often hiccup is a most troublesome symptom in uræmia owing to poisoning of the medullary centres. It may be met with in typhoid fever in this way. Cerebral irritation set up by a hæmorrhage or a tumour may cause persistent hiccuping. A very intractable and persistent form was often met with at the time of the influenza epidemic and gained the name of "hiccuping 'flue.'" In all probability the cases were mild forms of encephalitis lethargica, and the symptom was not uncommon in well-marked cases of the disease.

Finally, hiccup may be purely a functional phenomenon associated with an hysterical condition.

Simple Measures.

As regards the milder cases one can hardly do better than quote the famous passage in Plato's Symposium. It was the turn of Aristophanes to make a speech, "but either he had eaten too much or from some other cause he had the hiccup, and was obliged to change turns with Eryximachus the physician." Said Eryximachus, "Let me recommend you to hold your breath, and if after you have done so for some time the hiccup is no better, then gargle with a little water, and if it still continues, tickle your nose with something and sneeze, and if you sneeze once or twice, even the most violent hiccup is sure to go." The treatment was successful; Aristophanes said a little later, "the hiccup is gone; not, however, till I applied the sneezing, and I wonder whether the harmony of the body has a love for such noises and ticklings, for I no sooner applied the sneezing than I was cured."

To such simple measures in the milder cases may be added the trick of drinking from the wrong side of a glass, which naturally causes stretching and

drawing in of the epigastrium. The arms may be kept held above the head for a few minutes, or the knees drawn up and the thighs flexed on the abdomen, so as to cause pressure on the epigastrium, this posture being maintained for five or ten minutes. Firm pressure with the hand on the epigastrium for a few minutes may be effective. No doubt an important factor in curing the attack is getting the attention of the individual fixed on something other than the expected hiccup.

In the more persistent cases such simple remedies fail and more potent methods must be tried.

Counter-irritation.

Pressure on the eyeballs or on the supraorbital nerves may be effective, especially in an hysterical case. A blister may be raised in the sensory area of the third and fourth cervical nerves at the root of the neck just above the clavicle. Steady traction on the tongue for one or two minutes may be successful. A mustard plaster may be applied to the epigastrium for 10 or 15 minutes, or mild faradism used over this area. For a person who can stand it, a cold shower bath may cut short an attack of hiccuping. Direct pressure may be tried over the phrenic nerve 2 inches above the clavicle at the outer border of the sternomastoid, or light massage given at this spot.

Where basal pleurisy is present a tight band of strapping round the lower ribs applied in expiration may be very effective.

Gastric Cases.

If the cause of the trouble is in the stomach, carminatives are useful. A drachm of spirit of chloroform may be given and repeated every four hours, or a teaspoonful of sal volatile in a little hot water. Five to ten minims of the tincture of capsicum in a little water has proved efficacious. Five minims of the spirit of camphor may be given in milk or on a lump of sugar. Five minims of turpentine in a capsule is worth trying. If there is marked dilatation of the stomach the attack may be relieved by passing a stomach-tube and washing out the stomach with a 2 per cent. solution of sodium bicarbonate. This is, however, of no use in cases in which the cause is other than gastric. Patients whose hiccups are milder, are associated with indigestion, and occur after meals should be cautioned against eating too much or too quickly; for them an acid and bitter mixture is useful, or alkalis if they suffer from acidity.

Central Causes.

In toxæmic conditions, such as uræmia, treatment of the cause will naturally lessen the tendency to hiccup; but it may not be possible to combat the cause rapidly, and the symptom may persist obstinately even in those cases in which surgical treatment of the underlying condition is carried out. The symptom must be treated empirically; there are a variety of drugs which may be tried. In a persistent case it is advisable to withhold all solid food.

The following remedies have proved useful:—

1. Atropine hypodermically, gr. 1/100, to be repeated in four hours if required, or tincture of belladonna ℥ x. every four hours. Benzyl benzoate may be given in a 20 per cent. alcoholic solution; 20 minims in milk, or as an emulsion every two hours.

2. Sedatives may be tried. These include hyoscine (gr. 1/100), chloral, tincture of cannabis indica, the bromides, antipyrine; a large dose of sodium bromide may be administered per rectum. Hoffmann's anodyne may be given, a drachm in iced water. A hypodermic injection of cocaine may be tried (gr. 1/30–1/25). Lastly, and by no means least, morphia is most likely to be successful in a severe case, and may well be combined with atropine. Sometimes a few whiffs of chloroform will check the spasm, especially in a functional case.

3. In an obstinate case of obscure origin an emetic may bring relief; a hypodermic injection of apomorphine (gr. 1/20–1/10) should be given.

4. A capsule of amyl nitrite may be broken in a piece of wool and sniffed. A tablet of nitroglycerine (gr. 1/100) may be given every four hours, or the liquor trinitrini used in repeated doses, starting with half a minim and increasing the dose by this amount every three hours, till two minims at a time are given.

5. It may be necessary as a last resort to consider the injection of novocaine into the phrenic nerve at the root of the neck. Both nerves must not be treated on the same day.

Such drugs as those named above may prove effective; if one fails another must be tried. The more simple methods will suffice in the milder cases, especially where there is a functional element. Hypnotism even has been known to have success. But where hiccup plagues the last stages of an incurable condition, morphia alone, in all probability, will bring relief, and the euthanasia it secures should not be withheld.

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Special Articles.

ROYAL SANITARY INSTITUTE.

JUBILEE CONGRESS.

(*Concluded from p. 92.*)

Sir George Newman, in his presidential address on July 6th to the Section of Sanitary Science and Preventive Medicine, submitted that factors other than sanitary science—good roads, political power, economic development, social customs and habits—have played a large part in bringing about the present condition of the public health. After referring to the work of non-medical men who had advanced medicine, he went on to discuss propaganda, in which, he considered, the newspapers were playing an invaluable part.

Dr. W. A. Daley (M.O.H., Hull) and Dr. A. T. Nankivell (M.O.H., Plymouth) read papers on propaganda in public health, and Dr. G. Clark Trotter (M.O.H., Islington) detailed methods suitable for small as well as large authorities. Sir Thomas Horder advocated cremation, Dr. John Poynton and Dr. Carey Coombs read papers on acute rheumatism, and Dr. T. Izod Bennett discussed the intestine in relation to the occurrence of chronic rheumatism.

Port Sanitation.

At the conference of port sanitary authorities Sir George Buchanan dealt with the International Sanitary Convention to be presented for ratification to the 53 Governments represented at the recent Paris meeting. In the new Convention the requirements for clearing rats out of ships had been modified; inspecting officers could be empowered, if satisfied, to exempt ships from being so treated at the end of each six months. Ports were not to be formally declared infected if a certain number of cases of dangerous infectious disease had occurred; but, by way of compensation, efforts were to be made to increase means whereby countries might obtain intelligence regarding the prevalence of infectious disease in all parts of the world.

Dr. A. S. M. Macgregor (M.O.H., Glasgow) asked that port medical officers of health, when forwarding the names and addresses of contacts to the medical officers of health at the contacts' destination, should be required to state the degree of contact between the said passengers and the case of infection.

School Hygiene.

Lord Eustace Percy (President of the Board of Education), who presided over the Section of School Hygiene, said that the movement of the population from the centre to the outskirts of large towns made it possible to build the ordinary schools on open-air lines. The recent development of orthopædic schemes should eventually reduce the number of schools for cripples, and he expected much from the extension of physical training and of outdoor games for school-children. It was the ideal of some that the child should be admitted as early as possible in its life to

some form of school, but he thought that parents should endeavour to become independent persons, who should regard themselves as adequately fitted by training and knowledge to discharge their duties.

Opening a discussion on the teaching of physiology in schools, Prof. Winifred Cullis (Royal Free Hospital) said that medical students starting their work had a passion for disease, whereas they ought to have a passion for health. The ideal was that general biology should be taught in the public elementary schools, emphasis being laid on the physiological or functional side. The public, however, might consider that there was not time for exhaustive teaching of biology, and so stress should be placed on physiology. The teaching of physiology could be educational as well as instructive. Hygiene as taught in schools at present was not sufficiently based on physiological principles. The text-books were unattractive and dwelt too much on uninteresting structure, such as connective tissues. A suitable work for children must include information about reproduction.

Dr. Leonard Hill agreed that attention was concentrated too much on structure; even in the medical curriculum an excessive amount of anatomy had to be learnt. He wanted school-children to breathe air with 5 per cent. of carbon dioxide, so that they might see the results for themselves. The athletes of a school should compare the results of running races with and without the help of oxygen.

Councillor Julyan (Poole) thought the actual practice of school hygiene deplorable; children were to be given these excellent lessons in dark, ill-ventilated schools.

Dr. Dunstan Brewer (M.O.H., Swindon) said that future school-teachers, during their training, ought to learn the meaning of biological science and the possibility of its application to hygiene.

Colds and Catarrh in Schools.

Dr. Clive Riviere said that colds and even influenza which might have very serious consequences, were often considered trivial complaints by the public; people had great difficulty in realising that they themselves were centres of infection. The avoidance of infection was impossible; all that could be done was to keep fit, employ radiant heat for warming, keep the air in rooms moving and warm the floor. Parties for school-children should be held not at Christmas but in the summer, and, as far as possible, in the open air. The removal of tonsils and adenoids and the prevention of mouth-breathing might get rid of a few carriers. After an atttack some children acquired greater immunity; in others it was lessened. Prophylactic vaccine might give protection in some cases.

Dr. A. I. Simey (Rugby School) said that preparatory and girls' boarding schools were less troubled than boys' boarding schools; in the former group there was more supervision; in some of them the temperature was taken daily for the first few weeks of term, and any suspected child isolated. Infection was not endemic in schools, and a term of epidemic prevalence was invariably followed by one of comparative freedom. Season and weather had very little to do with it.

Dr. L. R. Lempriere (Haileybury College) had ascertained that 25 per cent. of the admissions to his school sanatorium were caused by catarrhal conditions. Children should be taught to blow the nose properly, and the handkerchief should be held well away from the nostrils. The effects of vaccines were sufficiently encouraging to merit further trial.

Dr. E. B. Morley (Mill Hill School) pointed out that the vaccines used were made from organisms which only produced secondary effects and that there was a great difference in their ingredients.

A paper on open-air schools was read by Dr. M. D. Horst (M.O.H., Leiden, Holland).

Hygiene in Industry.

Addressing the Section of Hygiene in Industry, Mr. J. R. Clynes, M.P., said that the conduct of educational and recreational activities should be left to the workers themselves. Hygienic improvement in factories and workshops had done much, but wholly mistaken ideas as to motives had impeded the movement. The workers suspected charity or thought that the work was being done purely in the interest of the employers, and those keen on trades-union interests thought that the more humane standards introduced would weaken self-defence as expressed in trades-union methods.

Dr. Thomas Watts, M.P., expressed disappointment at the attitude of workmen to welfare work. Only a few months ago, when visiting a cotton-mill, he had found that the workpeople would not avail themselves of the excellent cheap dinner provided at the canteen.

Councillor Price (Hemsworth), in welcoming the Miners Welfare Act, mentioned the difficulty of getting land for purposes of recreation. More safety appliances were wanted in mining; in 1924, out of 3000 men and boys employed in his mine, no less than 1141 were injured in the pit and had to be treated at the colliery hospital.

Dr. H. P. Newsholme (M.O.H., Croydon) said that monotonous occupations diminished the alertness of the workpeople; their thoughts strayed while working, and a sense of grievance might creep in. He was not in favour of too much specialisation of the workman's task.

Prof. E. L. Collis (Wales) opened a discussion on

The Future of the Factory Medical Service.

There was not, he said, at present a full factory medical service. The appointment of certifying factory surgeons, which began in 1844, had not proved adequate for the work to be done. Prof. Collis mentioned a large coal and iron works in the United States where 383 whole-time officials cared for 23,000 employees; he thought that the system of appointed doctors would prove the more satisfactory alternative for this country. He did not think the local authority—by means, for instance, of an extended school medical service—could very well do the work, for many workpeople lived outside their geographical area and could not be looked after during convalescence. Again, the rates should not be spent to benefit only one section of the community. But, recognising that the local authority desired to see that people employed in their areas were healthy, he thought that they might with advantage supervise any work done on behalf of the workpeople.

Lieut.-Colonel F. E. Fremantle, M.P., maintained that the present system of carrying on factory medical work was not in accordance with the ideals of the Ministry of Health Act. The Ministry of Health—one of the largest of all the ministries—could not take on more work and improvement in the service most be hoped for under the Home Office. He thought that the system of appointed doctors could not be universal, as a large number of employers could not afford to appoint doctors. Those appointed must work under supervision, and it was the function of governments to fill up the gaps. The minor local authorities might not do this properly, and it should be done by the major local authorities. He saw no force in Prof. Collis's geographical considerations or his contention that the rates should not be spent on only one part of the community. The milk industry had been benefited by money paid out of the rates, and public control must not be ruled out because it benefited only one part of the community. The rights of those of the certifying factory surgeons who had proved their worth should be safeguarded; the Home Office medical staff should be increased and they should be independent of lay control, just as were the medical staff of the Ministry of Health with their right of direct access to the Secretary of State.

Prof. F. E. Wynne (M.O.H., Sheffield) agreed almost entirely with Prof. Collis. The desire for a real coördination of public health work at the centre and locally which had given birth to the Ministry had not been realised. He objected to the work of

looking after workshops being taken from sanitary inspectors. The staff of the medical officer of health should control the hygienic conditions of factories as well, the present distinction as to which was a workshop or a factory was artificial and ludicrous.

Dr. Vernon Davies considered that the system of the appointed doctor would be unsatisfactory, he would be too dependent on the employer. He agreed that the sanitation of factories was a duty of the local sanitary authority.

Colonel P. S. Lelean (Edinburgh) said that applied physiology could provide the 3 (or possibly 5) per cent. increase in output which would be such an enormous gain to industrial efficiency. The Usher Institute of Public Health in the University of Edinburgh wished employers to send their problems to the Institute; but it had found difficulty in getting into touch with employers.

Sir Thomas Legge (Home Office) said that Prof. Collis, influenced by the success of the Silicosis Fund, had declared in favour of the appointed doctor, but his arguments had been completely answered by Dr. Vernon Davies. Certainly, however, the appointed doctor under the last Factory Bill had to satisfy the workmen. Ninety-five per cent. of the medical services rendered to workmen were carried out under the National Health Insurance authority, and the work of the certifying factory surgeon should be linked up with that done under the Insurance Acts.

Health Administration and Poor-law Reform.

In the Section of Medical Officers of Health the President, Dr. G. F. Buchan (M.O.H., Willesden), discussed the optional size of the unit of health administration. A system of block grants, he thought, would stimulate the expansion of health services.

Dr. T. Eustace Hill (M.O.H., Durham C.C.) referred to the lack of coöperation of boards of guardians with local health authorities. He was in favour of the transfer of the personal services from county councils to the whole-time rural medical officers of health who at present had not sufficient work to keep them interested.

Dr. H. B. Brackenbury (British Medical Association) pointed out that health administration was not yet coördinated centrally or locally. Local authorities could easily cope with the extra work which it was proposed to transfer to them. He agreed that possibly the National Health Insurance officials did not like the proposed transfer; they did nothing to counteract the impression among those insured persons who attended meetings that such a transfer would mean pauperisation of the insured person. The present financial basis of National Health Insurance administration would not necessarily be altered. The mixed functions of the Poor-law guardians—health, education, and assistance—must be separated, and not transferred en bloc to a new committee of the local authority. Topography and historical associations necessarily had to be considered in fixing the boundaries of local administration units, and the county and the minor authority must not both have jurisdiction on health matters in the same unit.

Mr. H. L. Eason (Guy's Hospital) said that in any municipal hospital the service provided ought to be of the same standard as that of voluntary hospitals.

Dr. Spencer Mort (Edmonton) described the North Middlesex Hospital and detailed a scheme for a public hospital service.

Dr. A. E. Cope (Poor-law Medical Officers' Association) welcomed the proposed transfer. The Poor-law medical officer, he said, was at present ignored by boards of guardians and had no opportunity of making his voice and views heard at their councils. The parish doctor was treated with contempt by everyone. If they were to come into closer contact with the medical officers of health, he felt sure that their views would receive consideration.

Dr. J. Fenton (M.O.H., Kensington) pointed out that in metropolitan boroughs no less than five health bodies had functions. The consequence was overlapping and duplication of the work, and the best results would only be got when an individual's health was dealt with by one local authority throughout his life. The borough medical officer could not envisage the health of his area as a whole, nor could the county medical officer. The work now done by the London Insurance Committee and the non-residential institutional work now done by the Poor-law authorities (including vaccination) should be transferred to metropolitan borough councils. The London County Council, under the scheme put forward by the Minister of Health, was to control no less than 70,000 beds, the size of which task could be judged when it was remembered that there were only 13,000 beds in all the voluntary hospitals of London. The London County Council would remain the supervising and coördinating authority for health services generally. Central executive administration over the metropolis must of necessity be bureaucratic; the London County Council should act as a provincial board of health for London, thus relieving the Minister of Health of much of the detailed work now falling upon him.

Mr. R. H. P. Orde (British Red Cross) said that the only real fault of the voluntary hospitals was that there were too few of them. The voluntary hospital had tacitly confessed its inability to cope with the situation and the State must fill the gaps. In the newer parts of the United States of America there were only municipal hospitals; in others the municipal hospital ranked, if anything, above the voluntary hospital.

Demonstrations and Visits.

Other subjects considered by Sections included personal and domestic hygiene and the housing of the poor. An evening address was given by Prof. C. E. A. Winslow (Yale) on the appraisement of health administration.

A demonstration in the hygiene laboratories of the Royal Army Medical College was one of the most interesting features of the Congress. An admirable demonstration was given of the Douglas Haldane method of indirect calorimetry by means of which the new British Army equipment was evolved. The pack is to be carried high on the back. By photographing the movements of a light on the end of a shovel, handled by an expert digger, the most profitable motions in digging have been worked out, and these are now taught to recruits. The new army emergency ration, which weighs 20 oz. instead of 30, was exhibited. It consists of biscuits, pemmican, chocolate, and blocks of tea, which, in the absence of water, can be eaten.

Visits were paid to the Port of London and elsewhere, and a number of receptions were held.

The Congress was attended by 1850 members, 1200 of whom were sent by local authorities.

DINNER OF THE CONGRESS.

The dinner was held on July 8th at the Hotel Cecil. The Duke of Northumberland, President of the Institute, presided, and more than 500 people were present.

After the toasts of "The King," the Patron of the Institute, "The Queen and the Royal Family" had been honoured, Dr. Charles Porter proposed "The Navy, the Army, and the Air Force." Surgeon-Commander J. L. Priston said that when some new sanitary measure for the Navy was in question, the success that measure had achieved in the hands of the Royal Sanitary Institute always convinced those who opposed. Colonel H. P. W. Barrow said that the Army and the Institute were closely connected in their work. The Parkes Museum was founded in honour of an Army surgeon, and the Institute, like the Army, had helped to train sanitarians. Replying for the House of Lords, Lord Burnham regretted that so little use was made of the administrative ability of that House in examining questions of health and local government. Lieut.-Colonel F. E. Fremantle, for the House of Commons, said that Members were all united in their support of hygiene, but members of the Institute should assist their representatives in

the House by their expert advice. Sir John Gilmour, Secretary for Scotland, proposing the health of "The Royal Sanitary Institute," said that the Institute, in its 50 years, had done much for sanitation in England, was now active in the Dominions, and latterly had made a great advance by enlisting women and teaching them to help. Prof. A. Bostock Hill, Chairman of the Council of the Institute, in reply, regretted the enforced absence of the Minister of Health, and thanked Mrs. Chamberlain for her presence. He said that though we had not yet reached the city of Hygeia, as pictured by Prof. Kenwood in a recent number of the *Journal* of the Institute, the roads thither had been made more easy for travellers by the Institute's 50 years of work. In the old days the poet had said :—

"The cottage homes of England, how fearfully they smell,
There's fever in the ashpit, there's sewage in the well."

but, to-day :—

"The cottage homes of England, in them we now find health,
And bright and happy children, who are the nation's wealth."

For the first 25 years of its life the Institute had concentrated on external hygiene; in the next 25 it had begun to think of hygiene in the home, and sought the help of women, seeking also to have the doctrines of hygiene taught to school-children. Later its influence spread to the Dominions, some of which were doing better than the mother country—for instance, he had seen how child welfare was progressing in Malaya among the quite ignorant natives, though large rooms were needed to carry on the central work, for the Malay mother always brought with her to the bureau a child, an umbrella, a basket of poultry, and her husband, all of which had to be suitably bestowed around her before she could begin accepting advice. He concluded by saying that the Congress with 1800 members, and many foreign delegates, was worthy of the jubilee of the Institute, and owed its success to the work of the staff, especially for the secretary, whose labours for the Institute for 45 years had been recognised by the Patron of the Institute, the King.

Returning thanks for "The Delegates," Prof. A. Castellani recalled the great work for tropical medicine done by Joseph Chamberlain, the father of the Minister of Health, founder of the tropical schools of Liverpool and London. Dr. G. C. Strathairn spoke as the delegate from Jamaica. Sir Thomas Hughes thanked the ladies present for their attendance at the dinner, and Dr. Andrew Balfour proposed the health of the Duke of Northumberland, their chairman. The Duke replied that, though proverbially a reactionary, and indeed perhaps on that account, he liked to be associated with those in the forefront of advances and especially with work, like that of the Institute, which was all for the benefit of others.

MEDICINE AND THE LAW.

Hospital Collections : Precautions against Fraud.

A GROUP of defendants was charged lately with conspiring to obtain charitable contributions by fraud. The prosecution alleged that they made collections at cinemas in various parts of London for the "National Hospital Aid Society," and that considerable sums were obtained, though in no single instance did any hospital or similar institution benefit. Some of the defendants, it was said, had actually addressed the audiences in cinema halls, urging the claims of the society to public support. Three young women had been engaged as collectors, but became suspicious and communicated with the police. One of these gave evidence at the police-court, according to a report in the *Times*, and explained how she came to be engaged to collect. She was told her remuneration would be 5*s*. in the £ on what she collected, with travelling expenses. She said she was told to collect from door to door and not in the streets, and she was particularly directed not to show her collecting box in the streets. The defendants were convicted at the Central Criminal Court and received sentences of imprisonment. With regard to street collections it may be of interest to note that the Home Office has recently made fresh regulations superseding the existing code published in September, 1923, though without making marked changes.

Under present regulations those responsible for a scheme of street collection must first obtain a permit from the Commissioner of Police. They must apply in writing in advance, and must state inter alia the name of the society responsible, the charity or fund, its objects, and its administrative headquarters. No collection may be made except on the day and between the hours and in the districts, streets, or places named in the permit. Nobody may take part unless with the written authority of the body which holds the permit of the police; this written authority must be produced on demand of a police officer. Collectors must be stationary on the footway, not more than two at the same point, and not nearer than 30 yards to the next collecting point. Nobody under 18 may collect. Collectors must not be accompanied by animals, and must not importune anyone to his annoyance. Provision against fraud is made by insisting that all collecting boxes be numbered consecutively and sealed, and that they be delivered to the persons responsible for the application of the money with the seals unbroken. Within a month of the collection day the promoters must forward to the Commissioner of Police an audited statement in a prescribed form showing the details of the amount collected, the expenses and the amount distributed to the charity or fund. No collector is to receive any payment by way of reward, and no promoter is to have, directly or indirectly, any payment or reward except such payments as are shown in advance on the form of application for a permit. The new Home Office regulations differ from those of 1923 in that the Commissioner of Police is no longer authorised to give a permit of a continuous character if satisfied that special reasons justify the grant. Nor may the Commissioner any longer authorise special exceptions to the rule that all persons acting as collectors must occupy a stationary position at some point of the footway. There are a few minor changes of language; the regulation forbidding the giving of "payment or reward" to a collector, for instance, has been changed into one forbidding "payment by way of reward"; it thus is now lawful to make payments to collectors otherwise than by way of reward or to reward collectors otherwise than by payment.

With our system of hospitals maintained by voluntary contributions, and with the modern organisation of flag-days and flower-days, some such regulation is essential. It is surprising to find that the Home Office did not possess the necessary powers until the passing of the Police, Factories, &c. (Miscellaneous Provisions) Act of 1916. Precautions against fraud in hospital collections must be carefully framed and rigorously enforced. The public must have no misgivings in its generosity.

Death due to Overdose of Sleep-inducing Drug.

In investigating a death apparently due to drug-taking, a coroner has occasionally suggested that all narcotics should be brought within the Dangerous Drugs Acts. If this suggestion has been deemed a little too sweeping, there seems to be at present an unfortunate uncertainty whether or not particular drugs and preparations are within the Acts. At a recent inquest evidence showed that a lady was found unconscious in an open boat, and died next day without recovering consciousness. She had suffered from sleeplessness; a London practitioner had prescribed "dial" tablets for her a few months ago, and her death was clearly due to a large overdose of this hypnotic preparation. Evidence was given that dial was a proprietary medicine, of the same type as veronal, and was not included in the British Pharmacopœia. The foreman of the coroner's jury pertinently asked if this drug could be obtained without a doctor's certificate. The witness, a medical practitioner, replied that he had never used or seen

the drug himself; he believed some kind of doctor's note was necessary before it could be supplied, but he could not definitely say. An open verdict was returned. It was clear that the drug was self-administered, but there was no evidence of the state of the deceased's mind. No blame was or could be attached to the doctor who had prescribed this sleep-inducing drug.

The Ministry of Health Committee instituted upon Morphine and Heroin Addiction dealt with the danger of a patient becoming an addict as the result of medical treatment or self-treatment for relief of physical pain caused by asthma, insomnia, overwork, anxiety, and other causes of mental distress. The report contained a section on precautions in the use of the drugs in ordinary medical practice, advising that the quantity supplied or ordered at one time should not ordinarily exceed what will be given before the patient is seen again. The Committee further advised that the patient should not be informed of the name of the sedative employed; they thought it particularly inexpedient to hand over to the patient original packages containing morphine tablets or the like which bear on their label a clear statement of the exact amount in each tablet; and they strongly deprecated hypodermic administration of the drug by the patient to himself. This excellent advice in relation to morphine and heroin addiction has a somewhat remote application to sleep-inducing preparations in cases where there is no reason to suspect or apprehend addiction. If the law intends to restrict the prescription of sleep-inducing drugs by the machinery of the Dangerous Drugs Acts, it must be careful to make itself clear. In the recent painful incident the victim had suffered from insomnia; her health had, it seems, not been so good since she lost her husband last year. She went to the seaside for a change. While there she hired a boat, ostensibly for a fishing expedition. She took an overdose of a preparation to which a doctor had recommended her to have recourse. Her act was either an accident or a deliberate impulse to take her own life. No professional care can ensure that these unhappy cases will not occur.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Irish Tuberculosis Officers in England.

SOME months ago the Department of Local Government and Public Health of the Irish Free State made arrangements with the Ministry of Health in London for a small number of selected county tuberculosis officers to spend a few months in public health work with medical officers of health in England, in the hope that they might thus obtain a wider outlook in public health work and some knowledge of administration methods. Several of these visitors have now returned to Ireland, and have submitted reports to their local authorities. They all speak in the most grateful terms of the pains taken by the Ministry of Health and by local medical officers of health to make their period of pupilage as valuable as possible. Care was taken to show them the several aspects of health work in different districts, rural and urban. A perusal of the reports shows, moreover, that the main object of the visits to England has been gained, in that the officers have returned with their imagination quickened and their outlook broadened. While they have hardly had time to become familiar with the details of administrative work, they have grasped the general principles on which administration is based. The courtesy shown by the Ministry of Health and the medical officers of health concerned towards our youthful health service is deserving of grateful mention.

The Milk-supply in Ireland.

For some time the newspapers have been drawing attention to the lack of cleanliness of the milk-supply of Dublin and other cities of Ireland. The bacteriological reports of Prof. J. W. Bigger, Dr. D. Houston, and others, have shown a dangerously high bacterial content and a frequency of tubercle bacilli in milk as exposed for sale. The Minister of Local Government and Public Health has now appointed a committee to inquire into the question, and this will consider whether the existing regulations relating to the cleanliness of milk are sufficient. The medical members of the committee are Mr. Matthew J. Russell, medical officer of health of Dublin, and Deputy T. Hennessy. Both are Fellows of the Royal College of Surgeons in Ireland.

Honorary Degree for Sir Berkeley Moynihan.

At the Summer Commencements in Dublin University the degree of M.Ch. was conferred, honoris causa, on Sir Berkeley Moynihan.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

New Medical Practice Act.

THE State Medical Society of New York is to be congratulated on the fact that, after more than a dozen years of hard work, it has succeeded in securing from the legislature an amendment to the public health law in relation to the practice of medicine. Under the old law there have been no means of bringing to justice those who are not properly qualified or licensed to practise medicine, and the State has been much plagued with quacks. The old law puts the responsibility of exposing such individuals upon the County Medical Board, a body that was naturally disinclined to play detective and police officer. The new law makes it necessary for all physicians to register annually:—

> "Any licensed physician who fails or neglects to register by Jan. 1st of any year . . . shall be required to pay for registration, in addition to the fee of two dollars, a further fee of one dollar for each 30 days, or part thereof, that he is in default; and any licensed physician who wilfully refuses or omits to register hereunder and engages in practice shall be subject to a civil penalty of one dollar for each day that such practice shall continue."

Violations of the law will come into the province of the Board of Medical Examiners, who will employ inspectors to investigate charges; they will be supported in their prosecutions by competent lawyers. Only those licensed by the Board will be allowed to practise medicine or call themselves "doctor." Osteopaths are licensed, but to obtain a licence an osteopath must prove that he has studied osteopathy for not less than three years under conditions satisfactory to the regents, or if his training has been done after 1910 he must have studied for more than four years in an approved college. An osteopath is not allowed to administer drugs or to perform surgical operations which involve the use of instruments.

An interesting innovation is the provision for the formation of a committee on grievances. This comprises four members nominated by the State Medical Society, two members nominated by the State Homœopathic Society, and one member nominated by the osteopaths, as well as three members "of conspicuous professional standing" appointed by the regents. To this professional body are addressed all complaints of unprofessional conduct. The findings of the committee are passed on to the regents, in whose hands are vested disciplinary powers.

The new law should do much to raise the standards of medical practice in New York and will doubtless be a model for legislation in other States.

Medical Publicity.

A good deal of pressure is being put upon medical societies in this country to undertake corporate advertising. The dangers are obvious, and yet there is something to be said for meeting the noxious pub-

licity of fraudulent vendors of patent medicines with the publicity of medical truth. One of the latest societies to enter upon an extensive campaign is the Jefferson County Medical Society in the State of Texas. The campaign will last a year and each week the advertisers will make use of 60 inches of space in two papers (morning and evening) with a combined circulation of about 50,000. The campaign has the approval and endorsement of the State Society. In experimenting with advertising material it was found that attempts to extol the regular physician, to compare him favourably with the irregular practitioner, or to plead for payment of his bills, were not received well either by doctors or by the public. The present campaign attempts to explain what medicine has done and can do for the protection and recovery of health, and the advertisements seem to be acceptable to both parties.

MEDICAL INSURANCE AGENCY.

A MEETING of the committee of management of the Medical Insurance Agency was held at the House of the British Medical Association on July 9th, Sir Humphry Rolleston presiding.

It was reported that Dr. R. A. Gibbons had been selected to represent the Medical Insurance Agency on the Council of Epsom College, and he was asked to arrange a meeting between Dr. Raymond Crawfurd, the chairman of the Council of the College, and Mr. Bishop Harman and Mr. Ferris Scott to ascertain in what way the Agency can best be of assistance to the College.

Annual Report.

The report of the work of the Agency during 1925 was presented by the Chairman, and showed that during the year under review steady progress had been made, and in particular, the number of life and endowment policies issued through the Agency had increased. The development of the Agency, said the report, was reflected in the fact that in the past five years the premium income had been doubled while its influence in deciding as to the propriety of claims, with a view to completing satisfactory settlements was more widely recognised. Life and endowment policies were issued through the Medical Insurance Agency between 1907 and 1920 to the extent of £416,684, between 1921 and 1925 the annual policies issued increased from £105,500 to £160,935, the total since the inception of the Agency now exceeding £1,000,000. The report indicated, however, that the income of the Agency from this source would not be proportionately greater each year, as a much higher rate of commission was earned on new proposals than on renewals, although the office work involved in looking after a life policy, once granted, was as great in the subsequent years as at the outset.

The report showed that more proposals were received in 1925 than in any previous year for motor-car insurance with an accompanying increase in premium income, but as there is a lower premium on the Doctor's Special Policy, introduced through the Medical Insurance Agency and underwritten at Lloyd's, and as this policy is being made use of increasingly, commissions have to be calculated at a lower rate, the insured persons gaining while the Agency showed a decrease in commissions earned. A decrease could also be expected, it appeared, under the heading of Employers' Liability, because more medical men were taking out a comprehensive household policy in which domestic servants were included, a gain in one place having thus to be set off against a loss in another. The attention of members of the profession had been called, said the report, to the advantage of Sickness and Accident policies, a class of protection which should become more popular with the medical profession.

The rebates to medical men since the formation of the Agency have exceeded £22,000, the figures for the last five years being given in the report as follows: 1921, £1697; 1922, £2064; 1923, £2069; 1924, £2811; 1925, £2791.

Grants to Medical Charities.

The report says: "Grants to medical charities were made during the year 1925 to the extent of 2,000 guineas, making a total since 1910 of £14,395 5*s*. divided as follows: Royal Medical Benevolent Fund, £4119 10*s*.; Royal Medical Benevolent Guild, £4148 5*s*. Epsom College, £3318; M.I.A. Girls' Education, £937 10*s*.; Sundries, £1872.

"The distributions to the charities during the past few years have been 1920, £1,015; 1921, £1,965; 1922, £1,595; 1923, £1,500; 1924, £787 10*s*.; 1925, £2,100. Since rebates exceeding £22,300 have been returned to members of the profession and charitable contributions totalling £14,395 have been made, it may safely be contended that the Medical Insurance Agency is fulfilling successfully two of the functions for which it was formed."

The report included, also, a reference to the large amount of work now done by the Agency in assisting in the choice of policies to meet individual needs, and drew attention to the necessity to medical men not only of insurance policies, but of securing proper settlement of claims. A further activity of the Agency was foreshadowed in the closing statement of the report that during the year the Agency had given careful consideration to the terms of a policy to enable medical practitioners to obtain loans from an insurance company for the purpose of partnerships or practices.

The report was approved with duly audited balance sheet and accounts for the year ending Dec. 31st, 1925. Arising out of the balance sheet Dr. R. A. Gibbons and Dr. R. A. Langdon-Down were appointed to consider the question of the rent for the accommodation received at the House of the British Medical Association and to report to the next meeting of the Committee of Management of the Agency.

Five Years of Progress.

The following statement of progress made during the years 1921–1925 was submitted to the meeting:—

Nett Premium Income for New Insurances and Renewal Premiums for the Years 1921–1925.

Class of insurance.	1921.	1922.	1923.	1924.	1925.
	£	£	£	£	£
Life and annuities . .	15,652	21,556	29,917	33,847	37,924
Increase . .	3,264	5,904	8,361	3,930	4,077
Motor-cars . .	11,156	12,767	13,517	16,490	16,849
Increase . .	2,211	1,611	750	2,973	359
Household, fire, and burglary . .	1,472	1,895	2,445	2,598	2,774
Increase . .	98	423	550	153	176
Sickness and Accident and Workman's Compensation . .	1,722	1,864	1,944	2,149	2,694
Increase . .	126	142	80	205	545
	£	£	£	£	£
Premium income . .	30,002	38,082	47,823	55,084	60,241
Increase . .	5,699	7,934	9,741	7,261	5,157
	£	£	£	£	£
Commissions, &c. . .	4,540	5,250	5,408	7,192	7,917

Sickness and Accident Insurance Premiums do not include the very considerable business passed to the Medical Sickness Annuity and Life Assurance Society.

ROYALTIES FROM PASTILLES.—At the Lancashire Chancery Court at Liverpool on June 23rd it was mentioned that since 1908 Liverpool charities have benefited by more than £8000 from the sale of certain throat pastilles invented by Dr. John Bark, of Liverpool. As a member of the medical profession, Dr. Bark declined to take the profits and arranged that his share should go to medical charities; the manufacturers have paid over royalties each year. The Court in a friendly action agreed to a scheme whereby the manufacturers would continue to have the rights of manufacture and sale and should pay £270 per annum—this amount to be distributed amongst Liverpool charities.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are health statistics for 1925 from a group of boroughs, two of them county boroughs :—

Name of district.	Estimated mid-year population (R.-G.).	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.	
			All causes.	Tuberculosis.	Cancer.	Resp. diseases with influenza.	Heart disease.	Infant mortality.	Maternal mort. from childbirth.
Coventry C. ..	133,500	16·3	10·6	1·23	1·14	1·9	1·0	77	4·6
Ealing B.	68,410	14·0	10·0	0·76	1·32	1·7	1·5	56	3·1
Cambridge B. ..	59,020	14·1	10·3	0·88	1·44	1·6	1·0	45	1·2
Wimbledom B. .	58,170	13·0	10·9	0·77	1·54	1·9	1·7	62	0·0
Swindon B. ..	56,880	16·6	11·1	0·90	1·56	1·7	1·8	60	4·2
Eastbourne C.B.	55,060	12·0	12·1	0·87	1·71	2·1	2·2	45	—

C. = City. C.B. = County Borough. B. = Borough.
— = Not given.

Coventry.

Dr. E. H. Snell quotes the Registrar-General as stating that at the last census the night population of the city was 128,157 and the day population 134,999, and that 7414 persons enumerated at Coventry worked elsewhere, whilst 14,256 enumerated elsewhere worked in Coventry. During 1925 unemployment reached its lowest post-war level.

Dr. Snell thinks the effect of grading "is towards a bettering of the milk-supply." So far the only step taken in the city has been the granting of three licences for pasteurised milk, and the result of sampling has been to show that the number of organisms frequently exceeds the permissible limit. Some progress has been made towards the provision of a public abattoir, and the report reproduces a design by Mr. R. Stephen Ayling, F.R.I.B.A. With slaughter-houses scattered all over the city, as at present, it is estimated that six whole-time meat inspectors would be needed to carry out the new meat regulations.

There were 20 notifications of encephalitis lethargica, with 13 deaths, as compared with 48 notifications and 8 deaths in 1924. Coventry is largely an unvaccinated community; there were 72 cases of small-pox—most of them mild—with no deaths. Sanocrysin has been tried at the sanatorium in the treatment of pulmonary tuberculosis since the summer of 1925 with immediate results that are encouraging. A gynæcologist, Dr. A. J. Ballantyne, has been appointed to attend the antenatal centre once a month, and an average of 21 mothers per session have consulted him. Miss Barratt, the chief health visitor, reports that the long-tubed bottle has disappeared, but that habits change slowly with regard to dummy-teats. As infant protection visitor appointed by the guardians under the Children's Act, she states that during the year 45 children were on the register, and that in all cases but one, where the home was not suitable and the child was removed, a high standard of efficiency was attained by the foster-mothers. The reasons given for applications for admission to maternity wards show that many married couples are living in lodgings. The scarcity of houses has also prevented the closure of unfit houses. A preliminary town-planning scheme was adopted a year ago.

In his school report, Dr. Snell points out that the visiting of the pre-school child needs to be extended and to be linked up more closely with school medical work. Arrangements have been made for the dental treatment of children of 3 to 5 years old at the school clinic, and for the record-cards of children seen at the centres to be passed on to the school clinic. There are still a certain number of parents who absolutely refuse to allow their children to wear glasses. The school dentists report that much of the benefit of the treatment given is lost through their inability, with the present staff, to treat the age-groups over 9 years. The residential open-air school at Corley Camp has accommodation for 15 boys and 15 girls. The camp is on high ground five miles from the city. Ten of the cases were sent because of rheumatism and chorea, and, as a rule, these cases did exceedingly well. Special attention has been given to chorea in the schools. The school medical staff was invited by the Board of Education to take part in special inquiries, but the staff was too small to undertake any such additional work.

Ealing.

Dr. Thomas Orr reports that medical practitioners in the district have been asked to help in the education of the public concerning cancer, and to promote its early diagnosis and treatment. Every facility for scientific diagnosis and the help of consultants are available at the King Edward Memorial Hospital. During the last five years 792 houses have been built by private enterprise and 208 by the town council. The rental of the recently-built municipal houses varies from 15*s.* 6*d.* to 22*s.* 6*d.* per week and working-class people can, as a rule, only pay this by sub-letting. During 1925 the council began the erection of 250 more houses. The general standard of housing is good, but there are three small areas which are made slum-like by bad tenants. At least 80 per cent. of the milk supplied in the district is pasteurised by the "positive holder" method and bottled. A proportion of the remainder is pasteurised by the "flash" method. Dr. Orr hopes much from the proper administration, especially by county councils, of the new Milk Act and Tuberculosis Order. He points out that pasteurisation is really a confession of failure.

The meat regulations have been well carried out in Ealing, but Dr. Orr points out that protection of cooked meat from dust and flies is much more important than protection of raw meat, and he hopes that similar regulations will be made to apply to all classes of cooked meat. A gynæcologist, Dr. J. W. Bell, has been appointed for antenatal consultations and his advice or assistance is at the disposal of medical practitioners in cases of abnormal or complicated labour. The Ealing day nursery has been closed owing to the small demand. There is complete coöperation between the maternity and child welfare centre and the school clinic, and also in the arrangements made for the teaching of infant care and management to the elder girls in the schools. An outbreak of pemphigus neonatorum occurred in the maternity hospital in November, fortunately of a mild type. The hospital was closed and disinfected, but after reopening there was a recurrence and cases kept appearing up to April, 1926.

A table in the school report shows great improvement in the children's teeth since 1915, although in 1925 there was a slight set-back, for which it is difficult to account. During 1925 47·8 per cent. of the entrants, 44·3 per cent. of the intermediates, and 74·0 per cent. of the leavers had sound teeth. These figures have to be compared with 23·0, 26·2, and 35·7 for the year 1915. Some parents still refuse to have their children's teeth attended to and steps are to be taken to insist upon treatment in all but the mildest cases of dental defect. A new scheme for dealing with crippled children through the national orthopædic hospitals at Great Portland-street and Stanmore came into operation in September, 1925. Special arrangements are also made for the regular supervision of the 93 school-children found to be suffering from valvular disease of the heart.

Cambridge.

Dr. Andrew J. Laird reports three accidental deaths from gas-poisoning during the year. One was due to a defective hot-water geyser and two were caused

by a leak from the gas-tap in the bedroom. He suggests that gas fittings should be periodically overhauled, but neither gas companies nor plumbers lay themselves out for this work. If the supplying bodies had placed on them the duty of testing the fittings of their customers in return for a small fee, the latter would only have themselves to blame for disasters such as those mentioned.

Mr. W. B. Grandison, the public dental officer, refers to the difficulty of getting all the mothers to persevere with dental treatment for their children. In the Cambridge scheme every effort is made to secure the healthy state of the mouths of expectant and nursing mothers and the babies are enrolled in the scheme when they have cut four teeth. Mr. Grandison is especially anxious that the work should continue between the ages of 3 and 5 years. In 1925 172 babies were enrolled. During the last six years the local authority have erected 417 houses, but the need is still very great and the number of families waiting for council houses is between 700 and 800. A Housing Week was held so that no one really interested might be ignorant of the facilities which existed for obtaining assistance to build or purchase. So far there is no evidence of a movement upwards from the very lowest stratum of housing. The contamination of apples by arsenic has received attention, and although arsenic was found there was no evidence of any ill-effects therefrom.

Wimbledon.

Wimbledon, Dr. A. Gilmour states, is mainly a dormitory for workers in London, and its popularity as such is responsible for the overcrowding which exists in practically all parts of the town. Houses for occupation of the working-classes are not erected by private enterprise, and suitable sites for municipal schemes are not easily found. There is much subletting of rooms, and Dr. Gilmour suggests that this practice might be restricted by by-law to the families of those employed locally, but admits such a measure would be difficult to administer.

The school report shows that dental inspections numbered 3059, and that 2418 children required and were offered treatment. Of these only 1197 attended to receive it. In addition to the use of the public baths by school-children for swimming, the Health Committee supplies hot baths, including soap and clean towels for school-children at the price of 1*d*. Great use is made of this opportunity.

Swindon.

Dr. Dunstan Brewer gives an interesting account of the history of Swindon, its progress in sanitary matters during the last five years, and the dangers to health (bacterial and otherwise), which threaten the Swindonians. He concludes with a study of the recent behaviour of scarlet fever in his district. In the early nineteenth century Swindon was a village standing on a hill of Purbeck limestone, 480 feet above sea-level. In 1842, when the Great Western Railway moved its works from Wootton Basset to Swindon, the industrial town was built in the valley on the Kimeridge clay and the new buildings were congested, because it was considered essential for the workpeople to live a stone's-throw from their work. There are no slums and the buildings seldom exceed two stories. There is not much smoke and rickets is almost non-existent. The water-supply is hard and from two sources. The Wroughton source resembles a surface-water and deteriorates after the end of a drought. Dr. Brewer suggests that it should not be used on such occasions until it becomes normal again. The Ogbourne source is less liable to pollution, and Dr. Brewer proposes that the borough should purchase sufficient of the land above the adits to control the surface and prevent pollution through cracks in the chalk. The condition of overcrowding does not improve much, and none but corporation houses are built for letting. The man with a small wage and a large family cannot find the 10 per cent. deposit for purchasing. Until satisfactory property can be rented at a low figure overcrowding will remain as it is. The corporation does its best to provide for the large families and has a housing estate outside the borough with 300 completed houses and 120 in course of erection. There is great need for an adequate general hospital with up-to-date equipment.

The municipal maternity hospital established in 1922 provided for more than one-fifth of the total confinements in 1925. A system of notifying puerperal pyrexia immediately, with a view to thorough investigation of each case, is in operation, and during the last five years no death from puerperal sepsis has been registered. Serious cases of puerperal fever are removed to the Fever Hospital for treatment. At the child welfare clinic several cases of an infantile affection characterised by a peculiar lemon colour, enlargement of the liver and spleen, and degeneration of the blood cells have been met with. During 1925 six cases occurred, two ending fatally; the deaths were certified as due to bronchitis. Another condition mentioned is abscess of the glands of the neck without tangible cause. These were coincident with the epidemic prevalence of scarlet fever and measles. Dr. Brewer refers to unnecessary operations for circumcision, with troubles and occasional deaths following the operation, and has found that if the prepuce is freed and cleansed soon after birth the need for circumcision becomes rare. For the fourth year in succession no Swindon-born child has been blinded by ophthalmia, whereas in former years two such disasters occurred annually. The report includes a careful analysis of the cause of death of infants who came under the purview of the clinic.

Eastbourne.

Dr. W. G. Willoughby mentions as some of the features of 1925 an almost complete absence of diphtheria; a high death-rate from influenza, 56 per cent. of the deaths being of persons over 65; and an excess of deaths over births for the first time. Tuberculosis, especially non-pulmonary, showed a marked decrease. The number of houses built in 1925 was the largest for many a year and the promise of 1926 is better still in respect of small houses. Dr. Willoughby regrets the want of sympathy shown by private owners and occupiers of houses with regard to letting rooms to young mothers and those about to become mothers. This difficulty is only met to some degree by the preference given to persons with children in the case of municipal houses. In municipal houses subletting is constant, overcrowding occurs, and rents are frequently overdue. Dr. Willoughby considers the personal work by health nurses in the homes vastly more important than mass lectures at the centres. Progress in food protection has been disappointing, and the new Orders have been of no practical value in the protection of meat and other food.

Nineteen samples of Certified Milk were taken from two producers. On six occasions the milk from one producer failed to satisfy the Ministry's standard.

The hours of sunshine at Eastbourne were 1898·9, which was the seventh highest recorded for the United Kingdom.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JULY 3RD, 1926.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 135 (last week 165); scarlet fever, 1552; diphtheria, 855; enteric fever, 46; pneumonia, 527; puerperal fever, 29; cerebro-spinal fever, 2; acute poliomyelitis, 3; acute polio-encephalitis, 1; encephalitis lethargica, 52; continued fever, 1; dysentery, 11; ophthalmia neonatorum, 107. There were no cases of cholera, plague, or typhus fever notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 3 (0) deaths from enteric fever, 25 (2) from measles, 8 (0) from scarlet fever, 30 (5) from whooping-cough, 32 (5) from diphtheria, 47 (7) from diarrhœa and enteritis under two years of age, and 28 (6) from influenza. The figures in parentheses are those for London itself.

REPORTS OF SCHOOL MEDICAL OFFICERS.

THE following table summarises the figures given in the school reports for two Scottish counties :—

Name of county.	No. on roll.	Av. elem. school attendance.	No. of routine children examined.	No. of special examinations and re-inspections.	Percentage of children found on routine examination requiring treatment.*
County of Dumbarton	28,806	23,867	7,446	2,152	13·8
County of Stirling ..	—†	—†	8,374	1,754	3·1

* Excluding dental defects and uncleanliness. † Not given.

County of Dumbarton.

DR. T. L. THOMSON presents his report as a series of statistical tables of great detail. This is an excellent method of summarising results, but such a report does little to stimulate the interest and coöperation of parents and laymen; the value of enlisting public support justifies full discussion and comment.

Rickets and chest diseases generally are on the decrease, but the rather high incidence of verminous children (14·5 per cent.) indicates a certain lack of parental interest and supervision, resulting in an increase of "dirt" diseases. Though no details are given, it is significant that, of 2319 children treated at the minor ailment centres, 1137 had skin affections. The number of parents attending the medical inspections has gradually risen from 3 per cent. in 1911 to 25·6 per cent. in 1925; this percentage should be greatly increased as the full knowledge of the good work being done gets disseminated. The fact that only a small number of abnormal children are reported in the county (139 mentally and 52 physically defective) is perhaps largely accounted for by the difficulty of undertaking the work of such a large district where only two whole-time medical inspectors are engaged.

County of Stirling.

DR. T. ADAM reports the smooth and satisfactory working of the new scheme coördinating medical and nursing services of the county under a joint committee representing the authorities for child welfare, school medical service, and tuberculosis. This system has many advantages. Among them may be noted the arrangement by which all children under 5 suffering from squint are brought to the notice of the school oculist. There is also good coöperation with the sanitary authority. The importance of ear, nose, and throat conditions is rightly emphasised, and it is probable that services of a surgeon specialist will soon be available. Good accounts are given of the work of the special schools and the merit of the teachers is recognised. In the rural areas, however, provision is still lacking for mentally and physically defective children, and it is to be hoped that the difficulties in this direction will be surmounted.

GLASGOW ROYAL HOSPITAL FOR SICK CHILDREN.—The report of the directors shows a remarkable response to the appeal for £75,000 to provide urgently needed additions and extensions. The whole of the money was subscribed in less than six months (without the aid of bazaars, sales of work, fêtes, &c.) by about 1000 persons. When these works and the extension of the country branch at Drumchapel are completed, there will be 400 cots, and the directors believe that the institution will then be the largest and finest of its kind in existence.

LIVERPOOL OPEN-AIR HOSPITAL FOR CHILDREN.—This hospital is at Leasowe. At the annual meeting on June 21st it was stated that nearly £24,000 had been spent on improvements during the last two years, and that over £10,000 had been raised without a public appeal. The senior medical officer, Dr. T. Hartley Martin, said that 80 per cent. of the patients who were treated at Leasowe went away cured. After-care of the children is an important part of the hospital's work; a small workshop for the training of ex-patients has been established and outdoor clinics have been added. An appeal is being made to clear off a debt of £13,000.

Correspondence.

"Audi alteram partem."

NON-SPECIFIC PROTEIN INJECTIONS IN CHRONIC ARTHRITIS.

To the Editor of THE LANCET.

SIR,—The toxic material which is presumably the proximate cause of chronic articular rheumatism and fibrositis is usually regarded as being made up of proteins and their split products, albumoses and proteoses.

The principle that underlies the treatment of these conditions by the introduction to the blood stream of proteins, foreign to it, is the stimulation of enzyme activity. This promotes the appearance in the blood of enzymes that have the power of digesting the albumoses and proteoses formed by the acid hydrolysis of the actual proteins thus introduced. To these enzymes the name "proteolytic" is given. Apart from gastro-intestinal processes, proteolysis is normally an intracellular phenomenon. The possibilities of toxic effects on the organism are always present when the process takes place outside the cells to any considerable extent.

What might be called the opposite process or that of "detoxication" implies the ability of the cells or fluids of the organism concerned to digest toxic protein fragments, and this is brought about by the stimulation of enzyme activity. Besides the latter phenomenon we have an increased cellular activity generally, the stimulation of the bone-marrow, the mobilisation of leucocytes, and the formation of antibody. Recovery eventually comes about through changes in the lymph, fluids rich in antibody being forced through the lymph channels. This causes a varying amount of constitutional disturbance along with a rise in temperature.

The protein may be introduced to the blood stream by means of a syringe and needle or it may be "derived" from the body itself as follows :—

Stimulation of the skin by hot baths, packs, hot air and the like, produce an active hyperæmia therein. This is associated with increased lymph-supply, and in consequence certain skin enzymes, such as lipase and proteose, are swept into the circulation along with exudates from the joints or fibrous tissue. These combined act as antigens or stimulators of enzyme activity. In other words, they act precisely as a foreign protein would. In this connexion it is useful to remember that blood so slightly altered as by being drawn from one part of the body and reinjected at another is capable of setting up a reaction and really acting as an antigen to itself.

This constitutional disturbance, brought about by the employment of baths and various physical measures, has been recognised at spas for centuries and is always known as the bath reaction. Patients themselves have come to expect it and look on it as a favourable sign.

"Protein shock" and a "bath reaction" are fundamentally the same, whether brought about by Dr. Yeoman's methods or Dr. Sundell's. The only thing that differs is the route.

I am, Sir, yours faithfully,

London, W., July 3rd, 1926. M. B. RAY.

HÆMORRHAGE ASSOCIATED WITH PERITONSILLAR ABSCESS.

To the Editor of THE LANCET.

SIR,—The publication in your issue of June 26th last, by Mr. Norman Patterson, of a case of serious hæmorrhage following the opening of a quinsy, has suggested to me the recording of the following case :—

A male, aged 28, who had been subject to recurrent tonsillitis since childhood, was seen by me with the history of having been in bed with a quinsy for a fortnight and of

having had, on the previous day, three severe attacks of hæmorrhage from the right side of the throat. Examination of the throat showed a small clot adherent at the site of rupture of a peritonsillar abscess in the right side of the soft palate. No further bleeding took place for two days, when another severe attack necessitated operative interference. I dissected out the tonsil, under a general anæsthetic, and stitched up the tonsillar fossa. Recovery was slow but uneventful.

This case differs from Mr. Patterson's, in that the hæmorrhage occurred after spontaneous rupture and that it was found possible to control the bleeding at the site of origin.

I am, Sir, yours faithfully,
A. J. WRIGHT, F.R.C.S. Eng.

Bristol General Hospital, July 7th, 1926.

SURGICAL TREATMENT OF GASTRIC AND DUODENAL ULCERS.

To the Editor of THE LANCET.

SIR,—I have read with much interest Mr. A. J. Walton's contribution to your issue of July 10th. I conclude that by simple suture of a perforating ulcer, he means suture and invagination of the ulcer. Mr. Walton states that "gastro-enterostomy at the time of perforation will depend upon the patient's condition, and later in his article he states that "in a large number of early cases a gastro-enterostomy can be perfectly safely performed at the first stage, but should the patient be seriously ill, simple closure should alone be performed." In all cases, whether early or otherwise, my experience has been that the patient is very ill. Shock is what we are immediately confronted with. It is true that the amount of shock varies, being less after a latent interval. Again, the amount depends upon whether perforation has or has not followed directly upon a meal. It should surely be our aim to minimise shock by reducing our operative manipulations to the full extent consistent with safety. The operation for closing and invaginating the ulcer is all we can reasonably expect these patients to stand. The addition of a gastro-enterostomy, however, rapidly and dexterously performed is bound to increase shock and so militate against success.

Mr. Walton states that he has had to operate upon 19 cases "where a simple closure has been performed elsewhere by surgeons holding similar views to Mr. Ley and myself and that these patients have returned some months or years later with definite symptoms of chronic ulceration. In two cases they have sought treatment for second perforation." Those of us who prefer the "simple suture" operation will be glad to note that in Mr. Walton's series of recurrences it had stood the test for months and even years. Nineteen cases from far and near in so large a clinic as that of Mr. Walton, must surely represent a very small percentage of recurrence. The shorter series of cases which were under the care of Mr. Walton's first assistant in the follow-up department will be disappointing to many of us, and such results do not compare with others that have been published. In my group of cases of perforation there was one instance of a man who perforated twice within 12 months. Quite apart from this series I have had four cases that have been in the hands of other surgeons and have returned with active ulcer. One was a man who was operated upon in New York for perforation. Three had undergone gastro-enterostomy following perforation. In one of these the operation was performed on account of hæmorrhage. In the second I found a jejunal ulcer with stenosis of the stoma. In the third case I found an active duodenal ulcer.

Mr. Walton can with confidence allay his suspicions about my statements. My hospital cases I see regularly and private patients I hear about from time to time. I quite agree that there is a percentage of cases (in my series 6 per cent.) which comes back with recurring symptoms, but this is small. There is always a more opportune time to perform a subsequent operation if necessary. Why not wait for it? Should it ever be my lot to be inflicted with a perforating duodenal ulcer I shall most certainly seek the conservative surgeon.

I am, Sir, yours faithfully,
Bradford, July 12th, 1926. BASIL HUGHES.

PARTNERSHIP: SOME FACTS AND A WARNING.

To the Editor of THE LANCET.

SIR,—A friend of mine recently has been, in my opinion, treated in a most unusual manner over a projected partnership, and has in law apparently no redress. I think, therefore, that it is only right that I should relate some of the facts of the case, as related by my friend to me, as a warning to others to avoid laying themselves open to a similar rebuff.

The partners shall be called A and B and my friend X. B retires and X agrees to buy, subject to certain conditions, which A agrees to. No mention is made of any preliminary assistantship and X understood that A had accepted him as a partner. B was about to undergo an operation and wished to arrange his affairs before he left the town, so X pays up the bulk of the purchase money and signs an agreement to take over B's house.

X then starts work with A as a partner and continues to do so for five weeks. He is introduced to A's patients *as A's partner*. X goes on the panel and *X's name is substituted for B's on the cards*. A and X open a *common banking account* and steps are taken for X to take over B's *share of the lease of a common surgery*. After discussion with A, X orders and has printed 2000 copies of a new joint account form. A agrees to the form of *X's plate with both names on*. This is bought and paid for by A.

X calls on all the doctors in the town *as A's new partner*.

With A's consent at the end of five weeks X goes to London to make arrangements for moving in his furniture and pays a locum in his absence. On arrival in London X receives a letter from A saying that he thinks it would be a mistake to proceed further with the partnership and that B had acted hurriedly. At the same time X learns that B is dangerously ill after the operation. X wires for an explanation and the only one he gets is "that it is nothing personal."

X recovers his purchase money from B and has to look elsewhere for a practice. When X went to join A he told all his friends that he was going into partnership with A. He received a number of introductions to people in A's town and he now feels that he has suffered considerable moral damage, apart from out-of-pocket expenses and loss of time. These facts should be a warning to those about to enter a partnership to see that the *partnership deed is signed before commencing work*, or else to arrange a preliminary assistantship.

I am, Sir, yours faithfully,
London, W., July 1st, 1926. C. GORDON-WATSON.

HUDDERSFIELD INFIRMARY.—Mr. George Brooke, of Spring Wood Hall, has presented an installation of remedial baths to Huddersfield Infirmary at a cost of £1500. A tablet has been placed in the bath establishment recording that the gift was made "in recognition of the eminent ability and unremitting services of William Turnbull, Esq., M.D., who for 60 years has held the office of physician to this infirmary."

THE NEW WESTMINSTER OPHTHALMIC HOSPITAL.—The plans for the new hospital in Broad-street, Bloomsbury, have now been settled and building will begin shortly. There will be a casualty department close to the main entrance, and most of the ground floor will be occupied by an out-patients' waiting-hall to hold between 300 and 400 people. Provision will be made for 14 paying patients in separate wards, and there will be wards for 20 women and 10 children, together with 10 beds for cataract cases. The kitchens will be at the top of the building, and there will be ample technical and administrative accommodation.

Obituary.

WILLIAM HOTSON CADGE, O.B.E., M.R.C.S.,
LIEUT.-COLONEL, I.M.S. (retd.)

Lieut.-Colonel W. H. Cadge, who died at Lowestoft on July 9th, was the son of Christopher Goulder Cadge, and was born in 1853. His uncle was the celebrated surgeon, William Cadge, of Norwich, and in many ways Colonel Cadge resembled him—particularly in his high sense of duty and unassuming generosity.

Educated at Norwich Grammar School under Dr. Jessup, William Cadge spent a year at the Norfolk and Norwich Hospital before going on to St. George's Hospital, where he had a successful career and qualified in 1875. He passed into the Indian Medical Service and after a year at Netley went to India. Though posted to the Civil Branch he volunteered for the Afghan War of 1879, and at Quetta distinguished himself by efficient and expeditious evacuation of the wounded. Having proved his ability he was ordered to join Lord Roberts's forces at Cabul, but was unable to get beyond Jumrood Fort in the Khyber Pass, where, however, he found scope for his energy in attending to the large number of sick men from the victorious army. Cadge himself went down with rheumatic fever and was invalided home. He returned to India to take charge of the Lucknow gaol, but poisoned his hand during an operation, and after a very serious illness again was sent back to England. After a period in charge of Agra gaol he became civil surgeon successively at Fetegarh, Aligarh, Fyzatal, Barelli, and Nainatal, and showed himself a skilful operating surgeon, particularly successful in the treatment of cataract and stone. Among the civil population his reputation stood high and his services were in constant demand. During the great famine he enhanced his reputation and was a member of the Lieut.-Governor's staff.

When Colonel Cadge retired from the Service on account of failing health he lived for a time at Lowestoft where his uncle was living also. Finding little pleasure in idleness, he applied for the post of medical officer to the Mutford and Lothingland Board of Guardians, and carried out his duties with careful efficiency. During the war in spite of his age he insisted on serving, and was appointed to the Ranelagh Hospital at Ipswich, which he largely equipped out of his own means. Here, from 1915 to 1918, he worked incessantly without regard to his own well-being, in recognition of which service he was afterwards decorated. Notwithstanding poor health, Colonel Cadge took a great interest in local affairs, especially in the Lowestoft Hospital. He was an active and enthusiastic member of the board, and the hospital became the richer by his generosity. He was a keen sportsman and, up to last year, a good shot. "But what endeared him to a very large circle of friends," writes a medical colleague, "was his courteous and loveable nature, his loyalty to his friends, his great kindness, and his humility, which was, perhaps, a barrier to the high place he could have obtained if he had ever desired fame and high position. He was such an unassuming personality that only his friends knew of his great ability and devotion to duty."

Colonel Cadge married, in 1882, Miss Flora Summers, who survives him.

DANIEL MACPHERSON TAYLOR,
M.D. GLASG., D.P.H.

Dr. D. M. Taylor, who died at Shelf on July 10th, was born in 1868. He was educated at the University of Glasgow, where he graduated in arts in 1878 and in medicine (with high commendation) four years later. For many years he was in general practice in London and York, but in 1906 took the D.P.H. and in 1910 went as school medical officer to Halifax, where he became especially interested in the Bermerside Open-Air School and Home. After three years of school work, Dr. Taylor was appointed tuberculosis officer and assistant medical officer of health to the Borough of Halifax, combining these duties with residence at the Shelf Sanatorium, of which he was superintendent. During the war he served in Mesopotamia with the Royal Army Medical Corps, and there is no doubt that his health was impaired. His own experience, and the loss of a son during the war, inspired in him a desire to give all possible help to the ex-Service men who came under his care. As a diagnostician his assistance was greatly in demand by local practitioners, who thought highly of his skill, and, though not widely known in the public health service, he proved himself a most competent colleague. Unfortunately, he had suffered from ill-health for some years and during 1925 had to be off duty for some months. He worked again during the winter but since Easter had been confined to his bed.

Dr. Taylor leaves a widow, two daughters who are in the nursing profession, and a son who is still at school.

Medical News.

UNIVERSITY OF OXFORD.—At recent examinations the following candidates satisfied the examiners in the undermentioned subjects:—

Medicine, Surgery, and Obstetrics.—Margaret N. Jackson, Constance I. Pattulo, Rosa S. Wordsworth, C. P. Blacker, J. C. K. Chilcott, Albert V. Clemmey, Gordon H. Crisp, C. R. Croft, H. E. Cuthbert, J. N. C. Ford, E. L. Fothergill, Kenneth A. Hamilton, William H. Hudson, Thomas C. Hunt, J. H. Kennedy, David Lurie, Philip Morton, David I. Rees, Frederick J. Sale, J. de la M. Savage, Thomas H. Sellors, Richard W. A. Simmons, George P. Thorold, Oliver R. Tisdall, and William R. Wood.

Pathology.—O. H. Lister, Nancy B. Ockenden, Howard W. Allen, J. A. Brown, Eric N. Butler, Henry E. Cuthbert, J. A. Eddy, J. H. Ferguson, William B. Fiddian-Green, C. L. Harding, Robert E. Havard, Reginald A. Haythornthwaite, Richard C. Hodges, George J. M. Inkster, Albert P. Kingsley, Ronald G. Macbeth, H. E. Mansell, Arthur E. Porritt, J. W. Pugh, J. S. Rake, C. R. Salkeld, and Edward M. Wright.

Forensic Medicine and Public Health.—Rosaleen L. Graves, O. H. Lister, Howard W. Allen, C. Charleson, Paul F. Cluver, Gordon H. Crisp, Henry E. Cuthbert, Walter N. Dickenson, C. L. Harding, Richard C. Hodges, William H. Hudson, J. H. Kennedy, David Lurie, P. C. Mallam, Philip Morton, Ripley Oddie, J. S. Rake, and Thomas H. Sellors.

UNIVERSITY OF LONDON.—At a meeting of the Senate held on June 23rd it was resolved:—

"That the Co-ordination and Developments Committee be authorised to approach the Duke of Bedford to ascertain whether and on what terms he would be prepared to negotiate the sale or lease of the land in Malet Street now occupied by the University, or of other land for the Institutions connected with the University now on the Bloomsbury site."

Lord Dawson, Mr. H. L. Eason, and Sir Holburt Waring were appointed to serve on the Academic Council for 1926–27, and Dr. E. Graham Little, Dr. G. N. Pitt, Sir Cuthbert Wallace, Sir Holburt Waring, and Dr. R. A. Young were appointed to serve on the Council for External Students.—The annual report of the superintendent of the Brown Animal Sanatory Institution for the year 1925 was received by the Senate, and the appointment of Mr. F. W. Twort as superintendent of the institution was continued.—It was reported that Sir Holburt Waring had been elected chairman of the Finance Committee and Sir Wilmot Herringham chairman of the Committee of Medical Members of the Senate.

William Julius Mickle Fellowship.—Applications are invited for this Fellowship, of the value of at least £200, which is awarded annually to the man or woman who, being resident in London and a graduate of the University, has in the opinion of the Senate done most to advance medical art or science within the preceding five years. Application must reach the Principal Officer not later than Oct. 1st, 1926.

Paul Philip Reitlinger Prize.—This prize of £30 may be awarded on Dec. 3rd, 1926, for the best essay embodying the result of research work on a medical subject carried out by the candidate. Candidates must be matriculated students who on June 1st were studying medicine in one of the schools of the University, or graduates of the University, who on the same date were of not more than five years' standing from the date of taking their first degree, and who are or were students in such school. Essays must reach the University not later than Oct. 1st, and particulars may be had from the Academic Registrar.

SOCIETY OF APOTHECARIES OF LONDON.—The Rogers Prize, of the value of 150 guineas, for the best essay on the treatment of the sick poor and the preservation of the health of the poor, has been awarded by the trustees (Sir John Rose Bradford, President of the Royal College of Physicians, and Dr. T. Vincent Dickinson, Master of the Society of Apothecaries) to Mr. Hugh J. McCurrich, M.S., F.R.C.S. Numerous essays, many of them of considerable merit, were received from different parts of the country and from as far afield as India and South Africa.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At a quarterly meeting of the Council, held on July 8th, Sir John Bland-Sutton in the chair, Mr. E. W. Hey Groves, Mr. G. Grey Turner, Mr. V. Warren Low, and Mr. Victor Bonney, having been elected at the annual meeting of Fellows, were introduced and took their seats on the Council. Mr. George E. Gask was appointed a member of the committee of management of the Examining Board in England in place of Mr. W. G. Spencer, resigned.—Sir Arthur Keith, Mr. V. Zachary Cope, Mr. James E. H. Roberts, Mr. Ernest M. Cowell, Mr. Arthur H. Southam, Mr. Bernard W. Williams, and Mr. John Howell Evans were elected Hunterian professors. Mr. Ralph St. L. Brockman, Dr. Hildred Carlill, and Dr. Alfred Piney were elected Arris and Gale lecturers. Mr. Clement E. Shattock was elected Erasmus Wilson lecturer, and Sir Arthur Keith was elected Arnott demonstrator for the ensuing year.—Sir Berkeley Moynihan, Bart., K.C.M.G., C.B., was elected president, and Sir Cuthbert Wallace and Mr. Francis J. Steward, vice-presidents, for the ensuing collegiate year.—A letter was read from Sir John Rose Bradford, chairman of the Lister Medical Committee, reporting that at a meeting of the Committee on June 3rd the Lister Medal for distinguished contributions to surgical science, with the honorarium of £500, was awarded to Prof. A. F. von Eiselsberg, of Vienna, and that, in compliance with the conditions of the Trust, Prof. von Eiselsberg had undertaken to give an address at the Royal College of Surgeons on some date in 1927 convenient to the president and Council.—The Museum of the College will be closed from July 19th until Oct. 1st for painting and redecoration.

Licences to practise dentistry have been conferred upon 68 candidates who have passed the requisite examinations and have complied with the by-laws of the College. The following are the names and dental schools of the successful candidates, viz. :—

L. C. Abrahams, London; A. M. M. Anderson, Bristol; G. Baker Durham; A. G. Batten, Bristol; R. G. Beck, Middlesex; A. Bendelstein, London; M. Berman, Guy's; J. H. Bernstein, London; R. Bliden and R. V. Bradlaw, Guy's; A. F. Brazenor, London; S. Brett, Charing Cross; H. Brindle, Royal Dental; C. E. Brittan, Guy's; N. S. S. Brooks, Manchester; H. Brown and I. E. Brown, Guy's; E. M. Buckley, Royal Dental; I. E. Buxton, O. St. L. Campion, and J. W. S. Coe, Guy's; J. E. Curnock, Charing Cross; R. Cutler, Guy's; C. I. Davies, London; A. M. Davis, Royal Dental; W. N. Farrar, G. Fellows-Smith, A. W. Francis, and M. Gerson, Guy's; A. E. Gordon, London; J. W. Hampton and Gladys M. Harwood, Royal Dental; A. H. B. Heesom and K. T. Hops, Guy's; A. Joffe, London; G. N. R. Jones, Guy's; O. M. S. Jones, Bristol; S. L. Kaplan, Charing Cross; R. F. Keet, Guy's; D. W. Lamb, Univ. Coll.; G. N. Lewin and C. E. Long, Guy's; C. Maude, Leeds; A. S. Moore and W. H. Naylor Guy's; Marjorie A. Newland, Royal Dental; J. N. Noriskin, London; G. W. Oliphant, Guy's; H. V. Pell, Royal Dental; V. C. Penberthy, Guy's; E. J. Perks, Royal Dental; P. Perl, Middlesex; C. A. Pollard and F. Popper, Guy's; F. H. M. Preston, K. E. Rispin, and H. F. Ritson, Royal Dental; S. A. Romain, London; R. Y. Simpson, Bristol; H. N. Squire, King's Coll.; N. v. Zyl Smit, Guy's; H. B. Smith, Bristol; C. L. Steyn and R. G. Swiss, Guy's; Catherine Watterson, Univ. Coll.; R. G. Wheeler, London; J. White, Guy's; and A. P. J. Williams, Univ. Coll.

The diploma of Member was conferred upon Alison Marianne Clark, Royal Free and St. Mary's Hospitals.

UNIVERSITY OF LIVERPOOL.—At recent examinations the following candidates were successful :—

DEGREE OF M.D.

R. G. Cooke and C. W. Healey.

DEGREES OF M.B. AND CH.B. (HONOURS).

Class I.—•†R. G. Walmsley.
Class II.—‡R. M. Ainsworth, † J. F. Galloway, •F. Murgatroyd.

• Distinction in Medicine. † Distinction in Midwifery. ‡ Distinction in Surgery.

FINAL EXAMINATION FOR DEGREES OF M.B. AND CH.B.

Part III.—Grace A. Austin, B. Brickman, G. E. Church, J. L. Clegg, D. Cohen, R. F. Corlett, J. C. Edwards, Elinor M. Gelling, E. H. Glynn, A. J. Goss, Dorothy A. Gough, J. Halton, D. G. Henry, B. S. Jarvis, T. A. Jermy, A. N. Jones, C. Kaufman, G. T. Krajewski, J. S. Logan, D. B. Macaulay, W. A. McCurdy, J. C. McFarland, G. McLoughlin, J. Morgan, G. W. Paton, H. E. Pearson, Mary T. Penrice, D. E. P. Pritchard, A. V. Russell, M. R. Sheridan, Mary A. Silcock, N. P. Slade, I. Thomas, G. D. Thompson, J. E. Wallace, Kathleen M. Ward, A. K. Wilson, Nora M. Wilson.
Part II.—S. W. Adler, A. B. Anderson, T. Blezard, •W. S. Brindle, H. C. Calvey, A. N. Cameron, •†J. K. Cameron, S. Canter, E. Cohen, F. R. Craddock, W. S. Creer, A. Dala, A. Dodd, T. L. Dowell, W. J. Eastwood, Lilian W. Edwards, Ruth M. Fennell, J. J. Graham, Elsie A. Griffiths, G. T. Harris, •E. D. Irvine, K. Jilani, R. N. Johnson, O. V. Jones, I. Kossew, •†T. Lasker, Theresa J. Lee, J. L. Lewis, F. E. Lomas, J. McHugh, T. C. Newman, J. Pasvolsky, J. W. Pickup, E. E. Prebble, C. Rigby, N. W. Riley, G. L. Roberts, J. B. Rushton, †M. Silverstone, V. J. M. Taylor, J. P. Thomas, S. L. Tunnicliffe, A. J. Walsh, E. N. Wardle, P. H. Whitaker, A. L. Williams, and R. L. Wynne.

• With distinction in Public Health.

† With distinction in Forensic Medicine and Toxicology.

Part I.—J. G. Hattingh, R. E. Jackson, G. W. Phillips, and J. Williamson.
Diploma in Public Health.—W. E. Haigh, J. E. Power, J. A. Scott, and A. E. Wall.
Diploma in Tropical Hygiene.—W. J. Aitken, N. Bligh-Peacock, T. Cullen, E. G. A. Don, H. P. Fowler, D. Lennox, A. G. Mackay, F. Oppenheimer, S. A. Talib, and N. S. Turnbull.

UNIVERSITY OF DURHAM.—At Convocations held on June 29th and 30th the following medical degrees were conferred :—

Doctor of Medicine.—Ram Mansoor (*in absentia*), James H Saint (*in absentia*), Margaret Scoresby-Jackson, Thomas H. Blench, Charles R. Smith, and Edward A. Welsh.
Doctor of Medicine for Practitioners of 15 Years' Standing.—Vincent P. Norman.
Bachelor of Medicine and Bachelor of Surgery.—William B. Allan, Max Coll, Dorothy E. Crisp, Mabel Dodds, Jessie S. Dunlop, William L. Fulthorpe, Hugh Gass, Dorothy Hopkinson, James H. Horsley, Grace C. Howie, Daniel S. Jackson, Ernest E. Kendall, Kenneth A. W. Law, John A. Livingston, Graeme M. Macintyre, Grace E. McVitie, Alexander D. Miller, Hyman Moross, Myer A. Phillips, Mabel Popham, Raymond H. Robinson, Henry Rosenbloom, Phyllis Routledge, Reginald C. F. Smith, Moses M. Suzman, Charlotte M. Thomson, Robert Y. Carter, Arthur D. W. Cooke, Francis P. Forrest, Hugh D. Golder, Richard A. Goodall, Charles V. Harrison, Francis McGuckin, Sidney McD. Selby, and Frank G. Sinclair.
Bachelor of Hygiene.—Madge Hopper and George Wilson.

The following received the Diploma in Public Health (D.P.H.) :—

Madge Hopper and George Wilson.

The following received the Licence in Dental Surgery (L.D.S.) :—

John Chalmers, George G. Clark, Philip W. Eddy, Godfrey E. Hutchinson, Alexander J. Munro, Henry R. Myers, and Charles H. Richardson.

VICTORIA UNIVERSITY OF MANCHESTER.—At recent examinations the following candidates were successful :—

FINAL M.B. AND CH.B. EXAMINATION.

• † Kathleen Sheehan (First-class Honours).
Florence Whitrow (Second-class Honours), J. K. Anderson, Frank Appleton, Florence M. Blades, George Bridge, J. F. Caithness, Marguerite E. Cliff, T. K. Clifford, Joseph Crowther, Harriet M. Dick, Margaret Dyson, Alec Fleming, I. H. Freedlander, C. F. Garfit, E. St. G. Gilmore, F. S. Hawkins, †Fanny Howe, T. J. Kay, H. B. Kilroe, J. H. Kitson, †C. T. Mills, G. S. de W. Moll, Richard Pendlebury, Marjorie Reekie, C. D. Roff, Maurice Sheehan, Olive de la W. Turner, W. C. D. Walmsley, E. J. Warburton, and J. T. Whitley.

• Distinction in Medicine.
† Distinction in Forensic Medicine.

Forensic Medicine, Hygiene, and Preventive Medicine.—Lillie M. Burton, Joseph Parness, and Mary I. Prentice.
Hygiene and Preventive Medicine.—Pieter Bester, R. H. Blackburn, G. W. Jones, B. R. Sandiford, W. S. Slater, and G. R. Walker.
Obstetrics and Surgery.—R. H. Barnes, Helen G. M. Bennett, Soloman Bernstein, J. W. Brooks, Louie J. Burton, J. F. Caithness, H. V. Crabtree, Harriet M. Dick, Margaret Dyson, Ralph Edmondson, Margaret Egan, Ernest Firth, I. H. Freedlander, J. S. Goller, Ernest Heard, Fanny Howe, E. P. Johnson, J. H. Kitson, George Metcalfe, G. L. Normington, R. H. Poyser, I. M. Preston, Marjorie Reekie, Nora Ridehalgh, C. D. Roff, R. F. Sheppard, Donald Starr, Florence V. Stephen, C. E. Sykes, and R. T. Wimmer.
Obstetrics.—Leonard Rosenthal.

THIRD EXAMINATION FOR M.B. AND CH.B. DEGREES.

Pathology.—Leslie Bold, H. J. Brennan, Mary G. Davies, G. B. Hardman, Morris Levine, Kathleen McGowan, Mary E. P. Mackay, S. L. Rowley, and Henry Tickle.
Pharmacology.—M. M. Barritt ‡G. L. Brown, Alice M. Butterworth, Alexandra W. Groves, W. S. Ramsden, Marian M. Reekie, G. F. Rowbotham, J. F. Wilkinson, and Frederick Wraith.

‡ Distinction in Pharmacology.

DIPLOMA IN PUBLIC HEALTH.

Gladys F. A. McLean.

DIPLOMA IN BACTERIOLOGY.

A. F. Abbassi and M. A. Omar.

UNIVERSITY OF ABERDEEN.—At the Graduation ceremony held on July 9th the following degrees were conferred :—

DOCTOR OF MEDICINE.

*John Fiddes, †William Buchan, †John S. Taylor, Wallace J. Gill, and Charles Shearer.

* Awarded highest honours for thesis.
† Awarded honours for thesis.

BACHELOR OF MEDICINE AND BACHELOR OF SURGERY.

Charles Anderson, James G. Bremner, Charles H. Cave, *Harry D. Christie, Charles C. Connochie, James Coutts, Archibald N. Forsyth, John W. Foster, John L. Gammie, Douglas J. T. Glennie, Evelyn Goldie, James R. W. Hay, Robert W. Hendry, *William J. Hogg, Reginald A. M. Humphrey, Frederick Hunter, George P. Middleton, Alexander Paterson, Catherine Peat, Margaret S. M. Reid, Charles E. Saunders, Andrew D. Sinclair, James I. Smith, *George Stephen, Arthur J. W. Wilkins, and Alexander Wood.

* Completed Final Examination with distinction.

UNIVERSITY OF DUBLIN: SCHOOL OF PHYSIC, TRINITY COLLEGE.—At recent examinations the following candidates were successful :—

FINAL MEDICAL EXAMINATION.

Part I., Materia Medica and Therapeutics; Medical Jurisprudence and Hygiene; Pathology and Bacteriology.—*T. J. Millin, *Cecil P. Martin, William J. E. Jessop, Dermot F. Walsh, Henry R. F. Tweedy, Gordon W. F. Pratt, Thomas J. O'Reilly Richard F. W. K. Allen, Francis O. W. A. Mahon-Daly, Julius Sayers, Harold S. North, Alexander J. Burden, and Samuel B. Dalrymple.

Part II., Medicine.—*Gilbert T. L. Archer, *Victor St. G. Vaughan, Robert E. Hadden, Herbert A. Brittain, James F. MacMahon, Annette K. Wood-Martin, John J. O'Dwyer, Arthur N. B. Odbert, Douglas Bluett, Stella C. Ross, Albert Sachs, Henry M. Nevin, George E. Dodds, Lionel B. Somerville-Large, Gladys L. Craig, Herbert Nelson, George S. Gardner, Victor G. Horan, Robert C. U. Warrington, and Daniel A. O'C. Quinlan.

Surgery.—*Henry O. Clarke, Thomas J. W. Keown, Robert E. Hadden, Ernest E. Satchwell, John C. T. Sanctuary, Silver M. E. Deane-Oliver, Derek St. C. Mackenzie, Gerald V. A. Griffith, Herbert A. Brittain, Henrietta Armstrong, Thomas F. M. Woods, James Craig, Robert H. Mitchell, George S. Gardner, Margaret H. Donaldson, Nancie N. Lowther, Evelyn E. Connolly, Douglas Bluett, George R. L. Jordan, John Quigley, Samuel Smyth, George E. Dodds, Ernest H. Hall, Henry A. Ferguson, Isabella K. M'Neilly, Ernest E. Malone, Menzies L. M'Cauley, Charles H. Wilson, Kathleen I. Purdy, James G. M'Dowell, and Richard T. P. Tweedy.

Midwifery.—*Robert R. Woods, *Solomon Behr, *Robert A. Q. O'Meara, *Wilhelm F. Knobel, Edmund P. N. M. Early, Edward G. Montgomery, Joseph A. Kevin FitzGerald, Evelyn E. Connolly, Maiben A. W. Roberts, Christiaan de Wet Meintjes, Ralph W. T. J Stewart, Gerald S. Smyth, Gerald N. Taylor, Edward A. Ellis, and Herbert Nelson.

DIPLOMA IN PUBLIC HEALTH.

Part I.—Pauline K. O'Flanagan,
Part II.—Anna J. O'Reilly and Mary B. Quinn.

UNIVERSITY OF SHEFFIELD.—Mr. Denton Guest, M.B., was on July 9th appointed to the combined post of demonstrator in pathology and assistant pathologist to the Royal Infirmary.

ROYAL NATIONAL HOSPITAL FOR CONSUMPTION, VENTNOR.—The Prince of Wales will open the Nurses' Home on Thursday, July 22nd, at 2.30 P.M.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—On Monday, July 19th, at 3 P.M., Mr. Letchworth will give a special demonstration in clinical ophthalmology at the Royal Eye Hospital; this will be free to all members of the medical profession. An intensive course in medicine, surgery, and the specialties will be held at the Prince of Wales's General Hospital (North-East London Post-Graduate College), Tottenham, N., from July 19th to 31st, daily from 10.30 A.M. to 5.30 P.M. It will include demonstrations, operations, general hospital clinics, clinical lectures, and the practice of clinical laboratory methods. From July 19th to August 12th, at 5 P.M. daily, the West End Hospital for Nervous Diseases is to hold a course of lectures on the diagnosis and treatment of common diseases of the nervous system; clinical demonstrations will be included. During August courses will be given at the Queen Mary's Hospital for the East End, Stratford (August 23rd to Sept. 4th), in medicine, surgery, and the specialties, and at the Queen's Hospital for Children, Hackney-road, London (August 18th to 28th), in diseases of children. Both these courses will last all day. Practical courses in anæsthetics are arranged at any time to suit post-graduates, and usually last about three weeks. Weekly practical courses in obstetrics and child welfare are arranged at the City of London Maternity Hospital (fee £2 2s.). Personal application must be made at the Fellowship offices. Copies of all syllabuses, of the *Post-Graduate Medical Journal*, and of the General Course programme may be had on application to the Secretary of the Fellowship at 1, Wimpole-street, London, W. 1.

Mrs. Stanley Baldwin last week laid the foundation-stone of the new West London Hospital Chapel.

THE Twickenham Urban District Council has received a charter of incorporation, and Dr. J. R. Leeson has been elected the first mayor of the new borough.

AN EDINBURGH WAITING-LIST.—On July 1st the waiting-list of Edinburgh Royal Infirmary was 2469, the largest on record.

WEST END HOSPITAL FOR NERVOUS DISEASES.—The annual report of this hospital at Gloucester-gate, Regent's Park, records that two extra clinic rooms have been provided in the out-patient department, one of which is devoted to psychotherapy.

HOSPITAL ACCOMMODATION AT SWINDON.—There has long been a serious difficulty about hospital accommodation at Swindon, and the town council has just made purchases of land as sites for a general hospital and a maternity and infant hospital.

DONATIONS AND BEQUESTS.—Mr. William Shaw, of Holywood, co. Down, gave £1000 to the Royal Victoria Hospital, Belfast, to endow a ward to be called "The Shaw Holywood" Ward.—Miss Rose Emily Boden, of Whittington, Lichfield, left £1000 to the Derbyshire Royal Infirmary.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.—When the foundation-stone of the new school was laid by the Minister of Health on July 7th, a message of cordial greeting and renewed acknowledgments was despatched to the Trustees of the Rockefeller Foundation. The Minister announced that he was appointing a committee to report to him on the permanent hospital facilities needed by the School. Sir Alfred Mond (chairman of the board of management) said that during his own period of office as Minister of Health the Trustees of the Rockefeller Foundation had made their magnificent offer of $2,000,000 for the building and equipment of a school of hygiene. It had been necessary to consult the Chancellor of the Exchequer of the day upon a condition of the offer that the British Government should make themselves responsible for the maintenance of the School after it was built. The necessary undertaking was forthcoming. In acknowledging the help received from the Senate of the University of London, Sir Alfred Mond cordially acknowledged the debt which the School owed to Sir Cooper Perry. Mr. Ormsby-Gore (Under-Secretary for the Colonies) spoke of the relation to the Dominions and Colonies of the tropical division of the School, of which he could not exaggerate the importance. In British tropical possessions the mortality and sickness rates in many areas were at present appalling. If men and women trained to deal with diseases, and still more with the causes of these diseases, could be got to work there, the problems could be solved with comparative ease. Mr. Neville Chamberlain (the Minister of Health) said that although the diagnosis and treatment of tropical diseases must remain in the domain of the specialist, the establishment of this School was a recognition of the fact that tropical medicine and hygiene had now become merged in a wider conception of preventive medicine. The Athlone Committee had recommended in 1921 that post-graduate instruction in all branches of public health and hygiene should be concentrated at one institution, which should be an affiliated school of the London University and should have a much wider scope than the training of medical officers of health for the home and colonial services. The Athlone report fortunately gave expression to ideas which the Rockefeller Trustees had for some time had in mind, and they had accepted that report as an appropriate interpretation of what could be carried out in this country. The general lines of the curriculum afforded some indication of the very wide scope of the proposed activities of the School. They embraced physiology as applied to hygiene; chemistry and biochemistry; bacteriology and immunology; medical biology (this division would absorb the greater part of the work of the old London School of Tropical Medicine); epidemiology and vital statistics; and, finally, the group of subjects comprising the practice and principles of sanitary administration and public health. The ceremony marked the beginning of a building which was the result of a combination of the two great English-speaking nations and which was probably destined to be famous as the greatest centre in the world of research and instruction in one of the most beneficent of all activities for the human race.

In connexion with the foundation of this School, its Director, Dr. Andrew Balfour, who has already done so much work in its organisation, is to receive a presentation at 5.30 P.M. on July 23rd in the library of the temporary premises of the School at 23, Endsleigh-gardens, N.W.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Bethlem Hospital Bill.

THE Bethlem Hospital Bill, which has passed through the House of Lords, was read a third time.

HOUSE OF LORDS.

THURSDAY, JULY 8TH.

University of London Bill.

The House went into Committee on the University of London Bill, the Earl of DONOUGHMORE in the chair.

Clause 7 (Provisions as to incorporation of colleges and schools in the University) provides as follows:—

(1) No statute made under this Act shall alter the incorporation in the University of the colleges known respectively as University of London, University College, and University of London, King's College, or the vesting, disposition, or management of any emoluments, endowments, trusts, foundations, gifts, offices, or institutions in or connected with either of those colleges so far as those matters are or have been regulated respectively by or under the University College, London (Transfer) Act, 1905, or the King's College, London (Transfer) Act, 1908, and no such statute shall provide for the incorporation in the University of any school of the University or other college, school, or institution; but if at any time it is agreed between the University and the governing body of either of the first mentioned colleges that it is expedient that as respects that college any such alteration as aforesaid should be made, or if at any time it is agreed between the University and the governing body of any school of the University or other college, school or institution that it is expedient that provision should be made for the incorporation thereof in the University, then, in any such case, it shall be lawful for the University and the governing body jointly to make application to His Majesty in Council for a charter in that behalf, and any charter which His Majesty in Council is pleased to grant upon any such application shall have full effect notwithstanding anything in any Act of Parliament or in any previous charter, deed, or other instrument whatsoever.

Earl BEAUCHAMP moved after Subsection (1) to insert the following new subsection:—

(2) Provided always that no Statute may be made under this Bill affecting any institution which was existing on Jan. 1st, 1925, except with the consent of its governing body.

He said that on the second reading the Earl of Balfour was good enough to say that he would consider this point, and the amendment had been put down with a view to carrying out his wishes. The amendment would exclude existing colleges from the operation of the Bill. He hoped that the Government would accept it.

Lord ASKWITH supported the amendment. The Bill was founded on the report of the Committee which dealt with the University as a whole and also in certain respects with the incorporated colleges and schools. Clause 7 dealt with certain colleges of the University and said that statutes affecting them should not be altered at all. That was perfectly reasonable. If any statutes were to be altered it should only be by agreement with the particular colleges. The clause provided that new colleges ought only be incorporated by agreement. In Clause 4 there was a provision concerning existing colleges, but that clause was confined to cases where statutes were made not being statutes of the University. There seemed, therefore, to be a gap.

The Earl of BALFOUR, Lord President of the Council, said that the powers given to the University of making conditions with regard to these matters were distinctly excluded with regard to existing schools. Where, then, was the danger against which the noble earl wished to guard? If it was really felt that with regard to the future of the colleges or with regard to any of the present colleges some safeguard in regard to religion was required His Majesty's Government had no objection to it. The whole object of this Bill was to improve the position of the constituent bodies. They did the teaching work of the University and it was their prosperity which was chiefly necessary if the internal side of the University was to carry out the functions which they all desired to see it exercise. The notion that they were going to reform the University without in any way affecting the constituent colleges was evidently illusory. In these circumstances he felt sure that the noble earl would not press his amendment in its present form.

Viscount HALDANE said that he entirely agreed with what the Earl of Balfour had said. The amendment would paralyse the work of the Commissioners and make it impossible for them to do a number of things for which they were looking. It would be infinitely better to take the Bill as it stood, which restricted the powers of the Commissioners to the substance of the plan in the report and enabled them to survey the whole field and to deal with it in the only way in which it could be dealt with. As to what outside colleges should come in, that was a question only to be decided by the Commissioners after examining the evidence.

The amendment was by leave withdrawn, and the Bill passed through Committee and was reported to the House.

HOUSE OF COMMONS.

THURSDAY, JULY 8TH.

Progress of Housing in England and Wales.

Mr. HERBERT WILLIAMS asked the Minister of Health if he was now in a position to state the total number of houses completed in England and Wales in the 12 months ended March 31st, 1926.—Mr. NEVILLE CHAMBERLAIN replied: The total number of houses completed in England and Wales during the year ended March 31st, 1926, was 173,426—106,987 with State assistance and 66,439 without State assistance.

Registration of Manipulative Practitioners.

Colonel DAY asked the Minister of Health if would consider an inquiry into manipulative surgery with a view to the recognition and registration of manipulative practitioners.—Mr. NEVILLE CHAMBERLAIN replied: No, Sir. This question was fully discussed in the debate on Feb. 9th on the motion of the hon. Member for London University and I have nothing to add to the statement which I then made.

Appointment of a Lay Member of the G.M.C.

Mr. ERSKINE asked the Vice-Chamberlain of the Household, as representing the Lord President of the Council, what was the object in appointing a lay member on the General Medical Council.—Major HENNESSY replied: It would be contrary to practice to disclose the grounds upon which the Privy Council advised His Majesty to make the recent appointment. No doubt my hon. friend is acquainted with public discussion which has taken place in connexion with the constitution of the General Medical Council.

Sir N. GRATTAN DOYLE asked whether the appointment of a lay member signified any change of policy from that adopted by the General Medical Council in regard to Dr. Axham.—Major HENNESSY: I cannot answer that question, but I do not think so.

Mr. ERSKINE: Is the hon. and gallant gentleman aware that Dr. Cowie, a registered practitioner, was now acting in the same capacity as Dr. Axham had acted in times gone by to Mr. (now Sir H.) Barker.

The SPEAKER said that seemed to involve individuals and might carry some implication which was not plain to him at the moment. For that reason he would like to see the question in writing before it was put.

Mr. MACQUISTEN asked if it was not the case that the appointment of a lay member on the General Medical Council was to abate the autocracy of the medical profession and to dilute the fanatical trade unionism with which they were obsessed?

The SPEAKER said that the hon. Member must try to abate some of his adjectives.

MONDAY, JULY 12TH.

Medical Inspection of Maternity Homes.

Mr. PENNY asked the Minister of Health whether, in view of the inability of nursing association committees to deal with the technical side of their activities, he would introduce legislation enforcing the composition of an advisory committee of local medical men in all cases in addition to the regulations for inspection now in force.—Sir KINGSLEY WOOD replied: It is clearly desirable that a nursing association which undertakes the management of an institution such as a maternity home should have the benefit of medical advice, but my right hon. friend doubts whether it would be expedient to attempt to enforce, by legislation, such a condition as my hon. friend suggests.

Mr. PENNY asked if the hon. gentleman would consider any alternative way of doing this. As these institutions were to a very large extent local institutions, would it not be better if local medical men inspected them periodically?

Sir K. WOOD: My right hon. friend, as the hon. Member knows, has already made various suggestions with regard to this particular case, with a view to improvement, and if my hon. friend has any suggestion to make I have no doubt that he will consider it.

External Degrees at London University.

Mr. HORE-BELISHA asked the President of the Board of Education whether the Government proposed to take steps by legislation to set up a statutory commission to give effect to the report of the Departmental Committee on London University, which would favour the abolishing of the external degrees of that University.—Lord E. PERCY replied: The Government have introduced a Bill in another place to set up a Statutory Commission to give effect to the recommendations of the Departmental Committee. But if the hon. Member will look at paragraph 8 of the Committee's

report he will see that it is explicitly stated that none of their recommendations is in any way designed to restrict the present facilities available for external students, or to prevent their development. This statement corresponds with the views of the Government and it will be the duty of the Statutory Commission under the Bill to carry out the Committee's intentions in this matter.

Infectious Illness among Members of the O.T.C.

Mr. RENNIE SMITH asked the Secretary of State for War if he could give an analysis of the infectious illness of 3660 members of the junior division of the Officers' Training Corps who were for this reason prevented from attending camp in 1925.—Sir L. WORTHINGTON-EVANS: There are no records in possession of the department from which the desired information could be furnished as the boys in question did not attend camp. I might add that it would be erroneous to assume that the 3660 members in question were ill. The great majority were "contacts" who are not allowed to attend camp owing to the risk of spreading infection.

TUESDAY, JULY 13TH.

PROGRESS OF PUBLIC HEALTH.

The House went into Committee of Supply on the Ministry of Health vote, Mr. J. F. HOPE in the chair.

On a vote of £18,117,048 for the salaries and expenses of the Department and other expenses in connexion with housing grants to local authorities for public health services, National Health Insurance administration, &c.

Mr. NEVILLE CHAMBERLAIN (Minister of Health) said that cancer was increasing at an alarming rate. Last year, in this country, 1336 deaths from cancer occurred per 1,000,000, which was equivalent in our population to the death of 50,000 persons. It had been estimated that out of every seven persons in this country who reached the age of 30, one would die of cancer. It was important that the public should be educated so that the disease could be treated in its early stages. The significance of the discovery of Dr. Gye and Mr. Barnard was that cancer was due to a virus which entered the body from outside, but which did not produce cancer until it was associated in the body with some other factor, the nature of which had not yet been clearly ascertained. The right hon. gentleman directed the attention of local authorities to the experiment which was being carried out at Papworth, near Cambridge, by Dr. Varrier-Jones in regard to the after treatment of tuberculosis. Here, he said, was a chance for one of our big progressive local authorities to start a settlement of its own on Papworth lines. Dealing with small-pox, Mr. Chamberlain stated that the disease was rapidly increasing in this country. The number of cases were as follows:—In 1922, 973; 1923, 2500; 1024, 3800; 1025, 5300; and in the first six months of this year, 5500 cases. This increase could not be regarded without a great deal of anxiety. It was true that at the present time the disease was present in a very mild form, but in the past they had had this mild form coexisting with a form which was one of the most deadly and depressing of maladies. If this virulent form were to reappear, those who fulminated against vaccination would rush to the vaccination officer for protection. Vaccination in connexion with small-pox was regarded wtih prejudice by a large number of people, but, of course, our vaccination laws were framed a good many years ago, and knowledge had increased and widened since then. At present there were 70 different diseases, to secure immunity against which vaccination was practised. Small-pox was the only disease in regard to which compulsory vaccination was applied. It might be that the very fact that this particular disease was picked out and separated from the others for this exceptional legislative treatment had served to inflame the fanatical feelings against it which had led to so large a proportion of the population going without vaccination. At any rate he had recently set up a Committee under the chairmanship of Sir H. D. Rolleston, then President of the Royal College of Physicians, to investigate the whole subject, and he was content for the present to await that report and any recommendation which they might make on the subject. The only other disease which he would say a word about was sleepy sickness. He thought a good deal of alarm had been created in this country by the very distressing after-effects of this disease. There had been some very painful cases of after-effects showing the moral changes due to this particular complaint, and it was unfortunately the case that as matters stood at present there was considerable difficulty in giving what they might regard as proper treatment to cases of this kind. The legal definition of mental deficiency would not cover cases of persons who had been affected by *Encephalitis lethargica*. There was something in certification for lunacy which was quite inappropriate for cases of this kind. That was a matter which was engaging his very serious attention, and it might be that he would have proposals to make to Parliament before very long to meet it. In the meantime it might reassure hon. Members to know that the disease appeared to be distinctly on the wane. In 1924 the number of cases was 5039. In 1925 it came down to 2635, and therefore he thought they were justified in drawing the conclusion that this complaint which appeared so suddenly and developed so rapidly had reached its maximum and was now passing away; and that soon it would become, not a matter which could be neglected, but one which would no longer give them serious concern and anxiety. There were many other subjects which he had not touched upon. If he had not said anything about the details of maternity and child welfare, or venereal disease, or the much larger question of the future of the voluntary hospitals, it was not because he underrated their importance, but merely because he recognised that there must be some limit even to the patience and toleration of the Committee. He hoped, however, that he had said enough to show the huge extent of the field which was covered by his department, and to point to the earnestness, and he thought also on the whole to the success with which they were grappling with the problems which confront them.

Mr. A. GREENWOOD moved to reduce the vote by £100.

Lieut.-Colonel FREMANTLE said that the newspapers were full of statements with regard to the starvation of the children of the miners, but he had seen no evidence in support of those assertions. On the other hand, evidence from medical clinics and welfare centres went to show that the health of the children was better now than before the strike. Dealing with the question of deaths in childbirth, Lieut.-Colonel Fremantle said that in the interesting report on public health, published for 1924, there were very serious figures, showing how unprogressive had been the treatment of that question. Although there had been a considerable reduction in maternal mortality, it had not been anything in proportion to the reduction in infantile mortality. Much more than that, there had been an actual increase in the mortality of women in childbirth. This showed that there was great room for an increase in the number of beds in maternity homes, especially in view of the lack of proper accommodation in working-class homes. He was of opinion, at the same time, that maternity homes should be regarded, not as permanent institutions, but as makeshifts until proper accommodation for maternity cases was provided in all homes. In regard to town planning from the health point of view, they saw really no earnestness on the part of local authorities to take the matter up. Another question of great importance was the supply of clean milk. There was no provision for the supervision of health in coal-mines. They heard of certain diseases among the men which were exceedingly troublesome. The Ministry of Health ought to take up the attitude, more and more, of being responsible for the health of the people in every department, and of knowing what health conditions were all over the country.

Dr. VERNON DAVIES said that it was true that for the last 50 years there had been a very happy and steady decrease in the rate of tuberculosis, except in the war years 1913 to 1918, when, for temporary reasons, there was an increase. But, despite that decrease, consumption was still our great white scourge, which took a terrible toll of the younger people. Dealing with the machinery at the Ministry of Health for dealing with the disease, Dr. Davies paid a tribute to the work of the panel practitioner who, he said, was the first link in the system of treatment. The Ministry had added to the panel doctor the tuberculosis officers, who were expert in the diagnosis and treatment of consumption. To get the full benefit of sanatorium treatment the cases must be taken early. The great failure in the system of the Ministry of Health was the lack of village settlements, and the Minister of Health ought to give a lead in that matter. The Ministry should divide the cases of tuberculosis into two groups, those that could be cured and those which were too far advanced. Sanatoria should be kept absolutely for the curable cases, and the unfortunate people who could not be cured should be removed from their homes to the Poor-law hospitals. His visit to Mr. Spahlinger had convinced him that he had made out a *prima facie* case for his treatment. The difficulty lay with Mr. Spahlinger. He was one of the most charming men and the very soul of honour. He was a wonderfully clever scientist, and was working on strictly scientific lines. His whole object was the alleviation of distress among his fellow beings, and his determination, if possible, to stamp out the disease. He was without the slightest desire for money. But they found a difficulty in tying him down to any definite legal agreement. Now he had no money at all, having spent £80,000 in his experiments for the good of humanity, and he was living from hand to mouth by taking odd patients who gave a subscription or donation to his institution. The one essential thing for Mr. Spahlinger was to be able to produce his

serum and enlarge his laboratory and stock. He (Dr. Davies) appealed to the Minister of Health to vote a certain sum, say, £50,000 or £100,000, to Mr. Spahlinger for the purposes of his research work.

Dr. WATTS said that the vaccination laws were administered in too lax a manner. Only a small proportion of infants were vaccinated. This was due more to the carelessness of parents than to conscientious objection to vaccination. Yet there were very few prosecutions for breaches of the law. The increase in the number of cases of small-pox was due to this laxity, and it also explained the action taken by foreign countries, such as the United States, to see that British sailors were vaccinated before they were allowed to land.

Dr. HADEN GUEST said that he thought that Mr. Spahlinger's work might be of value, but it was an occasion for private rather than public enterprise. He hoped that something might be done in that way. He thought he was speaking for medical opinion as a whole when he said that the real way of dealing with tuberculosis was by preventive rather than curative methods. If, for instance, they could make such an improvement in the standard of life of the people in this country that everybody every day in the year would have an adequate amount of food and would not do an excessive amount of work, the consumption statistics would fade almost out of existence. He thought that experiments which had been undertaken in providing workshops for men who had been discharged from sanatoria, where they could learn to take up life again under normal conditions, were on the right lines, and would be of great assistance to such men.

Sir M. MACNAGHTEN referred to a letter issued by the Ministry of Health to the Edmonton District Council, which, he said, placed an absolute prohibition on a doctor in a maternity centre giving advice or information to a woman on the subject of birth control. The letter stated that while a doctor could not give the advice himself, he might refer the woman for advice to a private practitioner or to a hospital. If the instruction was not complied with, the grant would be withdrawn. Obviously, he said, maternity centres ought not to be converted into birth control clinics, but all that was asked was that in the case of a poor woman a doctor should be in a position to give this advice and information without incurring the penalty attached to the instructions of the Ministry.

Dr. SHIELS said he associated himself with other speakers in appreciation of the results of the Spahlinger treatment, but there were considerable difficulties to be faced. He thought that the Minister should keep his mind open in regard to the possibility of acquiring this treatment for those who suffered from tuberculosis. He was glad that the Ministry would encourage local authorities to show initiative in the establishment of village settlements. Sunlight and artificial sunlight treatment had a great effect on certain types of tuberculosis, especially surgical tuberculosis. There had been some misunderstanding of the position of the Ministry in the matter, because many local authorities had the impression that the Ministry did not encourage the setting up of installations for this treatment. He hoped the misunderstanding would be cleared up, because the treatment was long past the experimental stage. It was also of great value in the treatment of rickets in children. The milk-supply of this country was by no means what it should be, and was far behind that of the United States. The Ministry should continue its efforts to try to eliminate tuberculous milk altogether. This country consumed, per head of the population, far too little milk, but they could not really urge mothers to give their children more milk unless they were sure that it was safe. More broad-mindedness should be shown, also, in the allocation of financial assistance for cancer research.

Sir KINGSLEY WOOD, replying to the debate, said that undoubtedly the corner had been turned so far as housing was concerned, and at last they were beginning to catch up the shortage. He could give an assurance that whatever decision was reached in regard to the housing subsidy in October, no alteration would be made in the financial contributions for the removal of slums. Thanks to the Economy Bill, the Minister had now been able to give the following increases and additional benefits to all men belonging to the Army and Navy. They would have an extra sickness benefit over and above the ordinary amount received of 3*s.* a week, making the total up to 18*s.* The disablement benefit would be increased by 1*s.* 6*d.* a week, making a total of 9*s.* a week. The maternity benefit would be increased by 6*s.*, making the maternity benefit to people in the Army, Navy, and Air Force Insurance Fund up to no less than 46*s.* They would also receive extra benefits in the way of dental and ophthalmic treatment. In regard to the Spahlinger treatment, offers had been made to Mr. Spahlinger, and it was no fault of the various Ministers of Health that no further trial had been made in this matter. It was utterly impossible for the Minister of Health to make a gamble of £100,000 in the present circumstances. In regard to the question of medical men being allowed to give advice on birth control at maternity centres before the Minister could make an alteration in public policy on that matter, there must be a much greater measure of public opinion behind it.

The amendment to reduce the vote was rejected by 255 votes to 107, and the debate was adjourned.

Doctors on British Cargo Ships.

Mr. PONSONBY asked the President of the Board of Trade with what number of crew and passengers British cargo ships were allowed to sail without having any doctor on board: whether this number was fixed by departmental regulation; and was he satisfied that no hardship was involved by the absence of a doctor on ships not carrying the requisite number, more especially in cases where the ship was not fitted with wireless apparatus.—Sir P. CUNLIFFE-LISTER replied: Section 209 of the Merchant Shipping Act, 1894, requires a doctor to be carried on every foreign-going ship having 100 persons or upwards on board. I think in all the circumstances the rule is a reasonable one. The hon. Member will appreciate that it would be impracticable to compel ships of a size so small as to be exempt from carrying a wireless apparatus to maintain a doctor.

Payment of Sickness Benefit in Scotland.

Mr. JOHNSTON asked the Under-Secretary to the Scottish Board of Health whether he was aware of the delays which took place in Scotland in the payment of sickness benefit to persons insured under the National Health Insurance Act; and whether he would take steps to prevent health insurance societies delaying payments of sickness benefit while corrections of a trivial and technical nature were being made on the claim form or the proposal form where these conflicted.—Major ELLIOT replied: I am not aware that any considerable delay takes place in Scotland in the payment of sickness benefit to insured persons. This question was recently considered by the Royal Commission on National Health Insurance, to whom evidence was submitted by the Scottish Board of Health on an analysis of 8000 cases. Of this number it was found that more than 83 per cent. of the insured persons involved received payment within four days to a week of the dates of the claims; about 14 per cent. received payment within 14 days, and that therefore only a very small residue of cases were delayed longer than a fortnight, sometimes on account of causes for which the insured persons were themselves responsible. I do not think therefore that any action on my part is called for such as is suggested in the second part of the question, but if any case where avoidable delay has taken place is brought to my notice I shall make inquiries.

Pure Milk Regulations.

Colonel DAY asked the Minister of Health when the pure milk regulations were likely to be brought into effect.—Sir KINGSLEY WOOD replied: The Milk and Dairies Order, 1926, will come into operation on Oct. 1st next. The Public Health (Imported Milk) Regulations, 1926, will come into operation on Jan. 1st, 1927.

Brigadier-General CLIFTON BROWN asked the Minister of Health what steps were taken to ensure that foreign condensed skimmed milk and other milk products imported from abroad were free from deleterious matter; and whether, in view of the proposed milk and dairy orders enforcing milk producers in this country to provide clean milk, he would prevent distributors in this country mixing British milk with any imported substance.—Sir KINGSLEY WOOD replied: The Public Health (Imported Milk) Regulations, 1926, impose a standard for the bacterial content of imported milk and require it to be free from tubercle bacilli. I am sending my hon. and gallant friend a copy of those Regulations and also of the Public Health (Imported Food) Regulations, 1925. I may further refer him to the provisions of Section 1 of the Sale of Food and Drugs Act, 1899, which deals with the importation of adulteration or impoverished milk or cream. The addition of any dried or condensed milk or any fluid reconstructed therefrom or any skimmed milk or separated milk to milk intended for sale is prohibited by Section 4 of the Milk and Dairies (Amendment) Act, 1922.

THE LANCET: SUBSCRIPTION RATES.

INLAND	One Year	£2	2	0
	Six Months	1	1	0
	Three Months	0	10	6
ABROAD	One Year	2	10	0
	Six Months	1	5	0
	Three Months	0	12	6

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
TUESDAY, July 20th.—GENERAL MEETING OF FELLOWS. 5.30 P.M., Ballot for Election to the Fellowship.

BIOCHEMICAL SOCIETY.
TUESDAY, July 20th.—11 A.M., Joint Meeting of the Biochemical Society with the London Section of the Society of Chemical Industry (in the Regent Rooms, Hotel Great Central) on the Scientific and Industrial Problems presented by the Hormones—the Natural Drugs of the Body. Chairman: The Rt. Hon. Sir Alfred Mond, M.P. Papers will be read by: Dr. H. H. Dale: The Experimental Study and Use of Hormones. Dr. H. W. Dudley: The Chemistry of the Pituitary Gland and of Insulin. Mr. F. H. Carr: The Commercial Production of Hormones. Dr. H. A. D. Jowett: The History of Adrenaline. Prof. G. Barger: Recent Progress in the Chemistry of Thyroxine. Dr. J. W. Trevan: Biological Assay of Hormones. A general discussion will follow the papers.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, July 19th, to SATURDAY, July 24th.—Special afternoon demonstration in Clinical Ophthalmology at the Royal Eye Hospital, St. George's Circus, S.E., on July 19th, at 3 P.M., by Mr. Letchworth. Open to all members of the medical profession without fee.—PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N.; Intensive Course in Medicine, Surgery, and the Specialties. Daily, 10.30 A.M. to 5.30 P.M. Clinical and laboratory methods, demonstrations, operations, general hospital clinics, and clinical lectures.—WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck-street, W. A series of lectures, including clinical demonstrations on selected cases, on the diagnosis and treatment of common diseases of the nervous system. Daily, 5 P.M., Monday to Friday inclusive.—ROYAL EYE HOSPITAL, St. George's Circus, Southwark, S.E. A series of demonstrations on the diagnosis and treatment of diseases of the eye. Daily at 3 P.M. Further information from the Secretary of the Fellowship.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, July 19th, to SATURDAY, July 31st.—Special Vacation Course: First week daily to Friday, 10.30 A.M. to 12.45 P.M. Demonstrations of clinical and "side-room" methods; 2 P.M. to 2.45 P.M., Demonstrations of Groups of Clinical Cases. 2.30 P.M. onwards, General Hospital Work, Clinics, &c. 4.30 P.M., Clinical Lectures. Monday, Dr. T. Watts Eden: Antenatal Care as it Affects the Child in utero. Tuesday, Dr. F. G. Crookshank: Influenza. Wednesday, Mr. E. Gillespie: Colitis, from the Surgical Aspect. Thursday, Mr. J. Howell Evans: Intestinal Diverticula and Diverticulitis. Friday, Dr. C. E. Sundell: Abdominal Tuberculosis in Children.
SATURDAY.—11 A.M., Dr. F. Thomson: Demonstration of Cases illustrating the Early Diagnosis and Treatment of the Infectious Fevers (at the North-Eastern Fever Hospital, St. Ann's-road, N.).

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, Leicester-square, W.C.
TUESDAY, July 20th.—5 P.M., Dr. H. W. Barber: Scleroderma.
THURSDAY, July 22nd.—5 P.M., Dr. J. H. Sequeira: Skin Affections of Animals Transmissible to Man.

Appointments.

HORSFORD, CYRIL, M.D. Edin., F.R.C.S., has been appointed Hon. Laryngologist to the Royal College of Music.

PARKER, W., M.B., Ch.B. Edin., D.P.H., County Medical Officer, Worcestershire.

PLATT, H., M.D. Manch., M.S. Lond., F.R.C.S. Eng., Honorary Clinical Lecturer in Orthopædics in the University of Manchester.

WILLIAMS, ANNA M., M.B. Edin., D.P.H., Assistant Medical Officer, Birkenhead.

WOODMAN, MUSGRAVE, M.S. Lond., F.R.C.S. Eng., Lecturer, ▶▶ Diseases of the Nose and Throat, University of Birmingham.

Sheffield Royal Hospital: HOLMES, E., M.B., M.R.C.S., Resident Surgical Officer; FRIZELLA, E., M.B., M.Ch., Casualty Officer; FLINT, R. L., M.B., B.Ch.; JAGO, J. W., M.B., Ch.B., House Surgeons; BEATTIE, W., M.B., Ch.B., SYKES, E., M.B., Ch.B., House Physicians; JAGO, J. L. M.B., Ch.B., Aural House Surgeon; BLAKELOCK, J. H., M.B., Ch.B., Ophthalmic House Surgeon; FAIRCLOUGH, J. H., M.B., Ch.B., CALLCUTT, J. S., M.B., Ch.B., Assistant Casualty Officers; TOWNROW, V., M.B., B.S. Lond., Supernumerary Surgeon to Ear, Nose and Throat Department; YATES, H. B., M.B., Ch.B. Camb., F.R.C.S. Eng., Assistant Honorary Surgeon; CHISHOLM, J., M.B., Ch.B. Edin., Honorary Consulting Gynæcological Surgeon.

University of Sheffield: GUEST, DENTON, M.B., Ch.B. Sheff., combined post of Demonstrator in Pathology and Assistant Pathologist to the Royal Infirmary.

Vacancies.

For further information refer to the advertisement columns.

Bangor, Carnarvonshire and Anglesey Infirmary.—H.S. £200.
Bolingbroke Hospital, Wandsworth Common.—Asst. Hon. Phys.
Bury Infirmary.—Radiologist. £150.
Cambridge, Addenbrooke's Hospital.—Cas. Officer. £130.
Cardiff City Council.—Pupil Asst. M.O. £300.
City of London Hospital for Diseases of the Heart, &c.—Two H. Phys. £100 each.
Darlington County Borough.—M.O.H. £900.
Derbyshire County Council.—Asst. County M.O. £750.
East African Medical Service.—Sanitation Officer. £660.
Evelina Hospital for Children, Southwark.—House Surg. At rate of £120. Also Hon. Dental Surg.
Grosvenor Hospital for Women, Vincent-square, S.W.—Hon. Asst. Gynæcologist.
Halifax Royal Infirmary.—First H.S. £250.
Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—Pathologist. £750.
Inverness, The Northern Infirmary.—Sen. H.S. £120.
Liverpool County Borough.—Junior Asst. School M.O. £600.
Liverpool, Royal Liverpool Children's Hospital.—Two R.H.P. and two R.H.S. At rate of £60 each p.a. R.M.O. £150.
London Skin Hospital.—Hon. Phys.
Manchester Ear Hospital.—H.S. £150.
Manchester, St. Mary's Hospitals.—Two H.S.'s. Each at rate of £50.
Metropolitan Hospital, Kingsland-road.—Hon. Anæsthetist and Ophth. Surg.
Miller General Hospital, Greenwich-road.—S.R.M.O. £250.
Nottingham Education Committee.—Asst. School M.O. £600.
Rotherham Hospital.—Jun. H.S. £150.
St. Helen's County Borough.—Asst. M.O. £600. Also Asst. M.O.H. (Tuberculosis). £450.
St. John's Hospital for Diseases of the Skin, 49, Leicester-square, W.C.—Pathologist. £100.
St. Paul's Hospital for Skin Diseases.—Res. M.O. £250.
Seychelles Government.—Asst. M.O. R.6500 per annum.
Staffordshire County Council.—Bacteriologist. £10 10s. per week.
West End Hospital for Nervous Diseases.—Hon. Phys. and Hon. Surg.
West London Hospital, Hammersmith-road, W.—Res. Asst. S. £200.
Wolverhampton and Staffordshire Hospital.—H.S. At rate of £150.
Wrexham and East Denbighshire War Memorial Hospital.—S. and J.H. Surgeons. £120 and £80 respectively.
York, County Hospital.—H.S. £150.

The Chief Inspector of Factories, Home Office, Whitehall, S.W., announces a vacancy for a Certifying Factory Surgeon at Weston-super-Mare (Somerset).

Births, Marriages, and Deaths.

BIRTHS.

ANDREWS.—On July 9th, at a nursing home, Faversham, Kent, the wife of R. Collingwood Andrews, L.D.S.R.C.S. Eng., of a son.

GODSON.—On July 9th, at Welbeck-street, the wife of Lieut.-Colonel C. A. Godson, *M.C.*, I.M.S., of a son.

MILLER.—On July 6th, at Emperor's-gate, S.W., the wife of Dr. Wm. Duff Miller, of a daughter.

SCOTT.—On July 7th, at Fellows-road, Hampstead, N.W., the wife of Edward Spencer Scott, M.D., of a son.

MARRIAGES.

FARR—CAPPER.—On July 10th, at Holy Trinity Church Brompton, Valentine Francis, M.B., B.Sc. Lond., to Margery Baylis, younger daughter of Mr. and Mrs. H. W. Capper, of Harvard-road, Gunnersbury.

WISHART—BEDALE.—On July 7th, at St. Thomas's Church, Coventry, George Macfeat Wishart, M.D., to Elizabeth Mary, second daughter of the late Canon Bedale.

DEATHS.

CADGE.—On July 9th, at Helmingham House, Kirkley Cliff-road Lowestoft, William Hotson Cadge, Lieut.-Colonel, I.M.S. (retd.), in his 73rd year.

HANSON.—On July 6th, the result of an accident, Dr. Helen Beatrice de Rastricke Hanson, Assistant Medical Officer, L.C.C.

PARKER.—On July 10th, at the Fanings, Lewes, G. F. Parker, M.R.C.S. and L.S.A., aged 89.

SHERBURN.—On July 7th, at Brantinghamthorpe, Brough, East Yorks, John Sherburn, M.B., C.M. Edin., J.P., in his 75th year.

WEEKES.—On July 3rd, at Modbury, South Devon, Reginald Newton Weekes, L.R.C.P., M.R.C.S.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE PREVENTION OF INSANITY.*

A PRELIMINARY SURVEY OF THE PROBLEM.

BY PROF. GEORGE M. ROBERTSON, P.R.C.P. EDIN.

Prophylaxis.

PROPHYLAXIS may be defined simply as the prevention of an attack of insanity when it threatens but before definite symptoms have appeared. It goes further than this, however, as it includes the taking of measures to avoid conditions which would favour an attack, for hygiene of the mind and of the body is prophylaxis in a general way. The term is applied here to particular steps taken with the immediate object of protecting the mind when threatened by danger. There are certain persons for whom prophylaxis is almost essential—for example, those with a known hereditary predisposition who have already suffered from an attack, and more especially those in whom the attack has been of a recurrent type, such as manic-depressive insanity. When such a case occurs the family physician should also bear in mind that the other members of the family inherit a similar predisposition.

Danger Signals.

Loss of sleep is first among the indications or warnings that should be attended to. The neuropath is usually a bad sleeper, so that every time he loses a night's sleep, it must not be assumed that an attack of insanity is impending. But extreme or prolonged insomnia is a danger and precautions should then be taken. Sleep should be sought for in natural ways and encouraged by avoiding everything that might prevent it, but a time comes when hypnotics administered with knowledge and under strict medical supervision are of the very greatest value. The public hear much of drug addiction or mania, the general physician is familiar with the craving for "tonics" and other medicines, but only the psychiatric physician comes in contact with the layman's horror of hypnotic drugs, which, despite its manifest advantages, interferes occasionally with prophylaxis.

Prolonged anxiety that cannot be dislodged runs insomnia close as a danger signal. The evils that follow in its train are many and at the climacteric and presenile periods of life they may culminate in a mental breakdown. The causes of the anxiety may be real and it may be very difficult to ease the tension before matters grow worse. The victims of the strain of anxiety may complain of restlessness, of irritability, of being unable to settle down to work, of having difficulty in fixing attention, and of insomnia.

Another danger signal is *mental and physical exhaustion.* While rest alone will benefit those cases which are simply due to overwork and want of sleep, in other cases unless the primary cause be discovered and removed, the improvement will be only temporary. The functions of the nervous system may be lowered in tone and a state of neurasthenic fatigue produced by prolonged poisoning from a septic focus. Mental depression is also accompanied by a failure of energy both mental and physical, and a neurasthenic state may be associated with anxiety.

A *change of character*, not amounting to actual insanity, is another important sign, particularly in those who are subject to manic-depressive insanity. In this form of insanity there are periodic phases of variable duration in which the patient is morbidly elated and others in which he is morbidly depressed. Many people, including some of the most able and brilliant, are subject to similar moods, not amounting to insanity; these are said to suffer from cyclothymia or to possess the cyclic temperament. These changes of mood can be controlled only to a limited extent, but much can be done to prevent their exaggeration into something definitely morbid. The measures employed in such prophylaxis are of the simplest kind: change of surroundings, relaxation, new interests, life in the open air, rest, sleep, moderation in all things, and attention to the bodily health.

The one important rule for the predisposed is not to ignore danger signals or warnings. A sign may seem simple, even trivial, yet it may mean much.

Early Treatment.

It is a common-place that the earlier treatment is begun, the more hopeful are its results, but early treatment implies a recognition of the early symptoms of disease. There is still much difference of opinion as to the early symptoms of insanity. It is believed by many that some of the cases receiving treatment for the prevention of insanity would not develop insanity were they to receive none. They believe that these cases of the psychoneuroses which others regard as exhibiting the early stage of insanity, suffer really from a definite mental disorder of a different kind. It is even alleged that the presence of a psychoneurosis is a protection against insanity. This is a point of some importance, since, if it is true, neurologists and others who have had little experience of true, insanity may perhaps be over-valuing the services they render. At the International Congress of Mental Medicine held in Paris in 1889, when this question was considered (*Comptes Rendus*, p. 36) it was agreed that psychasthenia, consisting of obsessions accompanied by anxiety, hesitancy in thought and action and physical phenomena, preserves the same psychic character throughout the whole life of affected individuals and does not change into other forms of mental disease. In rare instances it may be complicated with delusions of persecution, with anxious melancholia, and with hallucinations. I am inclined to agree that once a psychoneurosis has assumed a definite form, although it varies from time to time in its severity and in the details of its symptomatology, it does not tend to alter its character, or to assume that of insanity, any more than one definite form of fully developed insanity tends to alter into another. To this extent the treatment of the psychoneuroses is not the early treatment of insanity, nor can such treatment claim to prevent insanity from developing where that danger does not exist. To this extent also the existence of a definite type of psychoneurosis, except in rare instances, may be said to protect the individual from the occurrence of actual insanity. He must, however, qualify this opinion by the observation, that at an early stage it is impossible to foretell whether transient, vague, and disorderly mental phenomena will develop into a typical psychoneurosis or into a definite form of insanity. There are thus two stages, an initial stage when anything is possible, and a later stage when the type is fixed.

Prevention of the Acquired Insanities.

In the middle period of life when the acquired insanities are prevalent the benefits of prevention are more noticeable because they are more immediate. Alcoholic insanity and general paralysis occur at this period, and there are many other forms, for example, the confusional insanities, called from their causation the infective-exhaustive-toxic insanities. Although in these, as in all forms of insanity, hereditary predisposition plays its part, they are largely acquired and can often be prevented. Nothing need be said about these forms of insanity excepting that due to myxœdema, which has diminished almost to vanishing point since the discovery of its cause was made. Just as heredity is a factor to be reckoned with to a greater or lesser extent, in every case of insanity, so we are beginning to recognise that disturbance of the internal secretions plays a more or less important part in all forms of mental disorder. If the future holds for us a great therapeutic discovery in the domain of mental disease, it will probably be found in a knowledge and control of the internal secretions.

Alcoholism and Temperance.

As regards the prevention or abolition of alcoholic insanity, there is a very simple way of effecting this, provided it is voluntary. But even if alcohol were prohibited, not in the legal but in the real sense, the total number of cases of insanity would not be diminished by the full number of cases diagnosed as alcoholic insanity. Many of these, owing to inherent instability, would break down from other causes in the absence of alcohol. On the other hand, alcohol is a contributing factor but not the principal cause of insanity in many other cases, and in these abstinence might be the means of averting insanity altogether. Alcoholic insanity is diminishing, though not so rapidly as most people desire.

G.P.I.—Education and Salvarsan.

Another important form of acquired insanity is general paralysis of the insane. There are two promising remedies, benign tertian malaria and tryparsamide, for its treatment after it has actually appeared. An astounding fall in the number of deaths was recorded in 1919; the fact that this fall has continued is of supreme interest from the point of view of prevention. From 1907 to 1918 inclusive the number of male deaths was steady, and for eight years the biennial numbers did not vary more than ten. In 1919–20 there was a sudden drop of 26 per cent. The probable explanation of this sudden fall in the number of deaths is as follows: General paralysis may appear within three years after syphilis has been contracted, but it is not till seven years have elapsed that it occurs with any frequency. Of those attacked more than a half die within two years after the first appearance of the symptoms, which are usually present for a year before the patient is admitted to a mental hospital. If, therefore, persons develop general paralysis seven years

* An abstract of the concluding part of the Maudsley lecture, of the Royal Medico-Psychological Association, delivered on July 15th, 1926.

after infection, and if half die within two years, we require to go back nine years to find an explanation for any variation in the death-rate. In other words, to explain a sudden fall in the number of deaths in 1919 we require to investigate conditions in 1910. If this be done an explanation is found in the employment during that year of salvarsan and the cure by its use of those males who contracted syphilis. As the fall in the number of deaths in 1919–20 is 26 per cent., it is certain that many who had contracted syphilis previous to 1910 and 1911 also took advantage of the discovery of the new remedy. As to females, there was a steady fall from 1907 to 1918, doubtless due to the gradual education of males as to the danger of passing on an infection.

There was a further fall of 33 per cent. in the number of female deaths from general paralysis in 1919–20, as compared with the two previous years. This corresponds exactly with the fall in the deaths of males in time and proportion, but it was not directly due to treatment by salvarsan as was the case with males. It may, however, be traced to the employment of a rapid method of curing syphilis, with the result that the infectious stage of the disease in males was cut short by salvarsan, and fewer women became infected.

These observations teach us two lessons. The first, the success of modern scientific methods in preventing this terrible sequela of syphilis, and the second, the effect of educational propaganda. I attribute the whole fall in the number of deaths from general paralysis among females up to the year 1919 to the instruction given to infected males. It must not be concluded that as striking results will follow the appeal to women as have followed the appeal to men. The majority being innocently infected do not at present spread infection. There is, however, a virulent minority of immoral women, to whom an appeal would be made in vain. Such women can be induced to come for treatment only in their own interest; and they are coming.

Prevention of Senile Insanity.

As to measures for the prevention of insanity during senility, we are guided by the knowledge that the later in life insanity begins the less important is the factor of hereditary predisposition in its causation; and that in all forms of insanity occurring during senility the influence of the body, if not paramount, predominates. The margin of bodily resistance to mental breakdown is less in old age than at any other period of life, but senescence is a period of retirement, of a withdrawal from the fierce zone of life's battle. There is then not only decreased alertness of mind and diminished vigour, but a lowering of the sensibility which softens the effects of the harsh blows of fate. Sickness benefit, old age pensions, improved housing, better sanitation, and a higher standard of living may also be expected to have a direct effect in reducing the amount of insanity during this period of life. Without doubt preparation for a healthy old age by careful living during the middle period of life is the best insurance against senile insanity. In spite of this, however, hereditary tendencies to special diseases, such as vascular degeneration, may produce mental collapse as well as shorten life.

Is Insanity on the Increase?

All nations seem to pass through periodic phases in which fears arise that among them the occurrence of insanity is on the increase. So far as can be judged, the outlook in Scotland at the present time is distinctly favourable. Taking the last 15 years, the total number of insane persons has fallen from 390 per 100,000 in the first quinquennium to 369 in the last; and the number of insane persons registered annually for the first time has fallen from 2828 in the first quinquennium to 2731 in the last, although the population has increased in number. In these statistics there is no cause whatever for alarm.

Conclusion.

It must be apparent to everyone that the problem of preventing mental disorder is not a simple one. The possible causes of mental derangement are legion, and the possible combination of these, in individual cases, beyond counting. It is clear that when sickness of mind threatens or occurs, mental health cannot be regained by any royal road.

In the opening up of preventive channels a great responsibility rests on practising psychiatrists. It is futile to lament that those of unstable equilibrium turn elsewhere for help—to the quack, to the charlatan, to the barren ritual of the latest cult. The blame for this state of affairs must be shared by the psychiatrist. Far too long has he sulked in his cave; now he must come out into the market-place and offer his wares to all who need them. He must not confine his interests to his duties in the mental hospital. He must coöperate with the general practitioner and get into touch with the outer world through the agency of out-patient clinics.

An expert body of psychiatrists, trained in every device of medicine and psychology, and diligently applying themselves to the clamant needs of their generation, might avert much needless suffering on the part of those in mental difficulties or about to be overwhelmed. Let none be daunted by the magnitude of the enterprise that is envisaged, but rather find in it an incentive to continued and combined effort.

WOMEN'S ORGANISATIONS IN RELATION TO SOCIAL HYGIENE.

IN THE LANCET of June 26th we gave a general account of the annual general meeting of the British Social Hygiene Council held at 1, Wimpole-street, London, W., Mr. E. B. Turner presiding. The annual report and accounts having been adopted, officers and members of the Executive Committee for the ensuing year were elected. The new President is Lord Willingdon, formerly a Vice-President; the other Vice-Presidents and the principal officers remain unchanged. Dr. Valeria Parker, Director of the Department of Protective Measures, American Social Hygiene Association, and President, National Council of Women, United States of America, gave an address on the

Relation of Women's Organisations to the Social Hygiene Programme in the United States.

She recalled the origin of a social hygiene programme in the United States, when the National Women's Christian Temperance Union was organised in the early seventies. The Purity Committee of this union, later known as the Social Morality Committee, was concerned with the breaking down of the system of prostitution that had grown up in some of the larger cities, and was determined to promote a high and equal standard of morals for both sexes. Social hygiene committees had since been formed in connexion with the National League of Women Voters, with the National Congress of Parents and Teachers, and with the General Federation of Women's Clubs. The National Women's Medical Association had formed a committee for race betterment, and that a special committee, of which the speaker was chairman, was making a study of the number of clinics and number of antenatal clinics which are undertaking the proper diagnosis and treatment of venereal diseases for expectant mothers; Dr. Parker was therefore particularly interested in the report of the work in this direction carried out in Great Britain. She said that in the United States a grant was made from the Government, through the Children's Bureau, for the protection of maternity and infancy, and it was desired to know accurately to what extent such clinics are including the diagnosis and treatment of venereal disease. It was felt that the mother and the child should be given the benefit of such scientific discoveries as have been made for their protection.

The women's organisations in the United States had a very strong influence; they formed not only a channel through which education can be brought to the public in general, but are also a very powerful means of changing public opinion and of bringing about action.

In 1918 funds were provided by the American Government for education, research, and legal measures, and the reduction of venereal disease by means of public clinics, but to enable them to avail themselves of a proportionate amount of this money each State was required to agree to classify venereal disease as contagious. Each of the 48 States complied, Nevada being the last in 1922. The central funds were no longer available, but each State now financed its own work. The women's organisations had made no public protest against the classification of the venereal diseases, but they were opposed to the tendency to regard all women leading the lives of prostitutes as carriers of disease, this tendency having been carried in some cities to the extreme of subjecting all prostitutes arrested to an examination for venereal disease before conviction: those found free were released at once, and those found infected were detained. This procedure was being overcome by education as to the danger of male disease carriers and a persistent demand for equal administration of the law. Dr. Parker considered that the feeling of the majority in her country was that the fact that the law had been misused was not evidence that the law should be repealed, but that a strong effort should be made to secure the equal administration of the law for both men and women.

After the war a peace-time programme was formulated of which the educational side was still considered one of the most important factors. As a result of the change in public opinion, only one city—Reno, Nevada—remained where a segregated district is permitted.

In conclusion, Dr. Parker emphasised the desirability of enlisting the support of all women by interesting them in the subject, and expressed her opinion that the appointment of women police in communities was a most important step that should be taken. She urged the British Social Hygiene Council to consider how best to use women's organisations as one of the means of carrying forward the excellent programme that she had heard outlined.

MALARIA IN ITALY.

ONE of the landmarks in the progress of medicine is the mastery gained over malaria, which has been responsible for such countless deaths since the beginning of historic record. As Baron Bernardo Quaranta di San Severino said in a lecture illustrated by a cinematograph film at the Royal Army Medical College on July 12th under the auspices of the London School of Hygiene and Tropical Medicine, the fixed idea of "bad air," "mala-aria," created an irresistible legend which forced people to run away from malarial zones with the consequent neglect and abandonment of those areas, thus making local conditions worse. He pointed out that the Etruscans in earliest times mastered the art of building canals for draining, while later in the Roman epoch, when the conditions of the city during the first rulers were the cause of marsh fever, the Tarquins built a marvellous drainage system which is even in use at the present day. As, however, the danger of malaria never disappeared there were inaugurated the worship of the goddess of fever, and of Castor and Pollux, the gods of health, of Lucifer, of Æsculapius, and of Apollo, whose statues were discovered near the Fons Juturna, famous for the healing power of its waters. The disease then was attributed to bad water as well as bad air, and many ideas were conceived as a means of purifying malaria-infected spots. In quite recent times trees and plants exhaling peculiar resinous perfumes have been cultivated with this object, such as eucalyptus, cypress, pines, and sunflowers, but the cause of the spread of malaria evaded all theories until recently. It is interesting, therefore, to learn that from the most remote times certain African tribes protected themselves from malaria with a kind of mosquito net. The lecturer alluded to the well-known writings of Giovanni Maria Lancisi, a celebrated physician of the seventeenth century, as containing a clear allusion to the mosquito as a malaria carrier, and showed that modern science had concisely defined this idea in its particulars. From this point he went on to describe, with the help of the films, the birth of the mosquito, its infection, and the transference of this to the human being, while the rest of the lecture graphically described the measures which Italy has devised to fight the disease and which have given that country the most thorough anti-malarial legislation in the world. In 1887, said the lecturer, there were 21,000 deaths from malaria in the whole population of Italy—namely, 71 per 100,000; to-day the deaths are about 5 per 100,000; malaria is practically on its way to disappearing from the country. At the close of the lecture a telegram was sent to the Italian Ministry of the Interior conveying an admiration of Italy's splendid work on the part of British science.

THE TEACHING OF SWIMMING.

To the Editor of THE LANCET.

SIR,—The letter from Mr. Walter Edmunds, which appeared in your issue of June 19th, was both interesting and timely. But when Mr. Edmunds says that "the education authorities do not undertake the teaching of swimming," I think he cannot be aware of what is being done not only in his own neighbourhood of Putney, but all over London.

Swimming *is* taught in London elementary schools. Though it is not an obligatory subject of the curriculum, the great majority of schools send pupils to the baths during school hours. In a report which my committee presented to the Council last July it is shown that about 94,000 boys and 60,000 girls—i.e., about 75 per cent. of the total number of pupils of 11 years and upwards—are receiving instruction in swimming each year. Some 24,000 boys and 15,000 girls, unable to swim at the beginning, are able to swim at the end of the season, and it is reckoned that approximately four out of every five boys and one out of every two girls leaving elementary schools have been taught to swim under the Council's scheme. As a rule, the boys are taught by their class teachers, but for the girls special instructresses are engaged. Over 50 public baths, together with three baths under the control of the Education Committee, are used during the summer practically every day in the school week by classes from elementary schools, many of which continue to take swimming throughout the winter.

The flourishing position which swimming has attained in the London elementary school system is due in a large measure to the energies of the London Schools Swimming Association, a central association of teachers working in a voluntary capacity, which coördinates the efforts of the local schools swimming associations in directing the out-of-school swimming activities of the children. This Association organises annual galas and competitions, publishes books of instruction, and conducts examinations. Last year, under the auspices of the Association, no less than 8500 boys received certificates for being able to swim 100 yards, and 8000 girls for swimming 50 yards, while over 7000 children were awarded certificates for life-saving.

I can only speak of the schools maintained by the London County Council, but in justice to my committee and to the teachers who, both individually and through their associations, have been so successful in developing the instruction in swimming, I feel I ought to put these facts before Mr. Edmunds and your other readers.

I am, Sir, yours faithfully,
W. H. WEBBE,
Chairman of the London County Council Education Committee.

County Hall, London, S.E., July 12th, 1926

THE PANEL DOCTOR'S WAITING-ROOM.

A CORRESPONDENT has addressed us on the possibility of panel patients in doctors' waiting-rooms proving dangerous foci of infection. He declares that men, women, and children are herded in these rooms sometimes for hours, and that while some have little the matter with them, others may be in the most infectious stage of diphtheria or measles. In many cases, he adds, the waiting-room is badly ventilated, and the patients waiting attention vary in degrees of cleanliness.

We must demur at the suggestion that patients are kept waiting for long periods in overcrowded and unhygienic waiting-rooms. Great efforts have been made to ensure that panel patients are seen as promptly as possible, and very large panels are now exceptional unless the practitioner has partners. The public have, moreover, been educated to recognise the possible significance of a rash or a sore-throat, and seldom bring a really sick child to a waiting-room for diagnosis. Our correspondent may feel assured that, while this method of spread of infections cannot entirely be excluded, it is not a danger to which patients are commonly exposed.

THE "PURA" TEAPOT.

WE have received from Messrs. Joseph Gilbert and Sons, of Sun Works, Bissell-street, Birmingham, a patent teapot, devised to enable the spout to be more easily cleaned than is possible with the ordinary make. At the same time spent tea-leaves are prevented from blocking up the spout and the various unpleasant accumulations are obviated. This is made possible by the use of a movable strainer which slides down through a slot in the rim of the teapot and screens the large opening of the spout within the pot. On removing the strainer the internal spout opening is exposed to view for the purpose of cleaning. A coffee pot is also made on the same principle, and both vessels can be had in silver-plated nickel or Britannia metal, the price varying from 40*s.* 6*d.* to 134*s.* 6*d.* according to size, material, and pattern. The invention makes for cleanliness, and these pots should prove convenient in the home and particularly desirable acquisitions for hotels and restaurants.

PASTEURISATION OF LONDON'S MILK.

A NUMBER of medical officers of health were amongst those present on June 29th, when Lord Kenyon opened a new milk pasteurising and bottling plant at Valley Farm, Streatham.

Every gallon of milk dealt with at this farm is pasteurised, bottled, and sealed without being touched by hand. The milk is heated to a temperature of 145° F. and held in glass-lined tanks at that temperature for 30 minutes. After pasteurisation, it flows by gravity over coolers, situated in a glass-lined room into which fresh air is filtered, and thence to bottle filters and cappers. In this way 25,000 gallons (250,000 bottles) of pure milk can be treated daily. Two giant bottle washers have been installed, and each bottle is washed and sterilised for 20 minutes by 23 different operations. Churns are subject to a similar but shorter process. At a bacteriological laboratory on the premises tests are made to ensure the cleanliness and purity of the milk supplied to the consumer.

Lord Kenyon, in performing the opening ceremony, congratulated the United Dairies on the excellence of the new depôt's equipment. He was, he said, chairman of an Advisory Committee on Milk, and he was glad to be able to say that 90 per cent. of the milk drunk in London was pasteurised. He looked forward to seeing it all so treated. Mr. J. H. Maggs, chairman of the United Dairies Ltd., claimed that the milk trade was now in advance of legislation, and remarked that if medical officers of health could move the Legislature to further action the United Dairies would not complain.

GUY'S HOSPITAL DENTAL SCHOOL.—Mr. Francis Dyke Acland, Chairman of the Dental Board of the United Kingdom, last week opened an extension of the dental school of Guy's Hospital which has cost £23,000, £5000 of it contributed by the Dental Board. When the school was opened in 1889 approximately 4000 patients attended: last year the number was 84,000. The number of students enrolled exceeds 2000.